Supporting Information for

Evolution of Pyrrolidine-Type Asymmetric Organocatalysts by Click Chemistry

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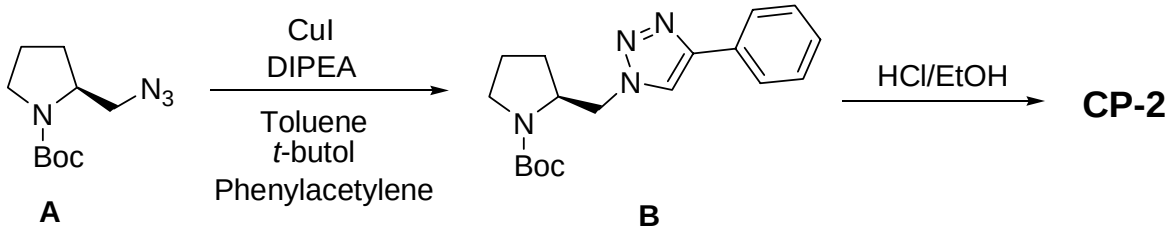
General Information: Commercial reagents were used as received, unless otherwise stated. Chemical shifts are reported in ppm from tetramethylsilane with the solvent resonance as the internal standard. The following abbreviations were used to designate chemical shift mutiplicities: s = singlet, d= doublet, t= triplet, q= quartet, h= heptet, m= multiplet, br= broad. All first-order splitting patterns were assigned on the basis of the appearance of the multiplet. Splitting patterns that could not be easily interpreted are designated as multiplet (m) or broad (br). Mass spectra were obtained using fast-atom bombard (FAB) spectrometer or electrospray ionization (ESI) mass spectrometer. Optical rotations were measured using a 1 mL cell with a 1 dm path length on a Perkin-Elmer 341 digital polarimeter and are reported as follows: $[\alpha]_D^{rt}$ (*c* in g per 100 mL of solvent). HPLC analysis was performed using ChiralPak columns purchased.

Method A:

Synthesis of chiral catalyst CP-2:

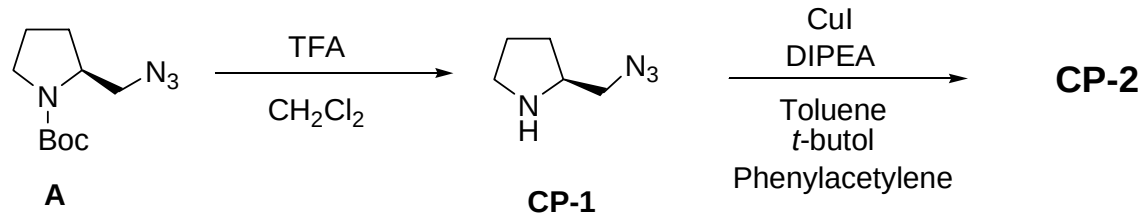


To a solution of **A** (226 mg, 1 mmol) in toluene and *t*-butanol (4mL and 1mL) was added phenylacetylene (122 mg, 1.2 mmol), CuI (10 mg, 0.05 mmol) and DIPEA (170 µL, 2 mmol). The reaction mixture was stirred at rt overnight. After removal of the solvent under *vacuo*, the residue was purified by flash chromatograph on silica gel to afford **B** as white solid (314 mg, yield 96%). ^{1}H NMR (300 MHz, $CDCl_3$): δ1.37-1.65 (10H, m), 1.67-1.83 (1H, m), 1.89-2.07 (2H, m), 3.08-3.50 (2H, m), 4.15 (1H, s), 4.37-4.79 (2H, m), 7.29-7.38 (1H, m), 7.38-7.48 (2H, m), 7.62-7.90 (3H, m).

Chiral product **B** was deprotected in 5M HCl in ethanol to give the hydrogen chloride salts, which was subsequently dissolved in CH_2Cl_2 (5 mL) and then treated with saturated $NaHCO_3$ solution (15 mL). This mixture was stirred for 1 hour. The aqueous layer was extracted with CH_2Cl_2 (5 mL×3). The combined organic layers were dried over anhydrous Na_2SO_4, and concentrated in *vacuo* after filtration to give essentially pure **CP-2** as pale yellow solid (301 mg, 96%). $[\alpha]_D^{rt}$= +41 ^{o} (c=1.0, CH_3OH) ; ^{1}H NMR (300 MHz, $CDCl_3$): δ 1.35-1.52 (1H, m), 1.58-1.83 (3H, m), 1.85-1.99 (1H, m), 2.89 (2H, t, *J*= 6.6 Hz), 3.51-3.64 (1H, m), 4.11-4.21 (1H, dd, *J*= 7.9 Hz, 7.7 Hz, 13.8 Hz), 4.35-4.44 (1H, dd, *J*= 4.5 Hz, 4.3 Hz, 13.4 Hz), 7.21-7.30 (1H, t, *J*= 7.5 Hz), 7.35 (2H, t, *J*= 7.4 Hz), 7.77 (2H, t, *J*= 7.3), 7.86 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 25.5, 29.1, 46.6, 55.5, 58.0, 120.5, 125.7, 128.0, 128.8, 130.7, 147.5; HRMS for $C_{13}H_{17}N_4^+$ ($M+1^+$), calcd. 229.1448, found 229.1446.

Method B:

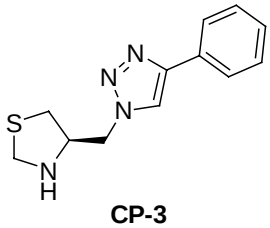
Synthesis of chiral catalyst CP-2:



To a solution of **A** (452 mg, 2 mmol) in CH_2Cl_2 (5 mL) was added dropwise TFA (5 mL) at 0^{o}C. The mixture was warmed to room temperature and stirred overnight. After removal of the organic solvents under *vacuo*, the residue was dissolved in CH_2Cl_2 (5 mL) and then treated with saturated $NaHCO_3$ solution (15 mL) for 1 hour at rt. The aqueous layer was extracted with CH_2Cl_2 three times (5 mL×3) and the combined extracts were dried over anhydrous Na_2SO_4. Concentration in *vacuo* after filtration gave **CP-1** as yellow oil (438 mg, 97%). $[\alpha]_D^{rt}$= -32 ^{o} (c=0.75, $CHCl_3$) ^{1}H NMR (300 MHz, $CDCl_3$): δ 1.35-1.50 (1H, m), 1.66-2.00 (3H, m), 2.44-2.61 (1H, m), 2.86-3.04 (2H, m),

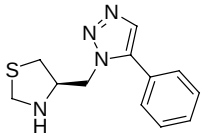
3.17-3.39 (3H, m); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 25.5, 29.0, 46.6, 56.2, 57.7. HRMS for $C_5H_{11}N_4^+$ ($M+1^+$), calcd. 127.0984, found 127.0982.

To a solution of **CP-1** (438mg) and phenylacetylene (245 mg, 2.4 mmol) in a mixed solvent of toluene (8 mL) and *t*-butanol (2 mL) was added CuI (20 mg, 10 mmol) and DIPEA (500 μL, 6 mmol). The reaction mixture was stirred at room temperature overnight. After removal of the solvents, the resulting residue was purified by flash chromatograph on silica gel to give **CP-2** as yellow solid (365 mg, 83%).



CP-3

The title product was prepared according to **method A** as white solid (87% yield). $[\alpha]_D^{rt}$=+10 ^{o} (c=0.5, CH_3OH); ^{1}H NMR (300 MHz, $CDCl_3$): δ2.65-2.74 (1H, dd, *J*= 6.0 Hz, 6.0 Hz, 11.4 Hz), 2.99-3.07 (1H, dd, *J*= 6.4 Hz, 6.4 Hz, 10.6 Hz), 3.82-3.94 (1H, m), 4.22 (2H, s), 4.34-4.44 (1H, dd, *J*= 7.9 Hz, 7.9 Hz, 14.1 Hz), 4.56-4.67 (1H, dd, *J*= 5.0 Hz, 5.1 Hz, 14.1 Hz), 7.29-7.37 (1H, m), 7.37-7.47 (2H, m), 7.79-7.88 (2H, m), 7.89 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 35.1, 50.4, 52.4, 63.0, 119.6, 124.7, 127.2, 127.8, 129.5, 146.8; HRMS for $C_{12}H_{15}N_4S^+$ ($M+1^+$), calcd. 247.1012, found 247.1016.

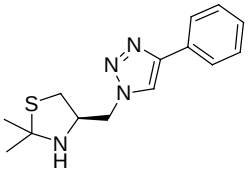


CP-4

1,5-substituted triazole ring was formed following the published procedure.[1] To the dried flask containing a solution of EtMgBr (2 mmol) in anhydrous THF (2 mL) under a nitrogen atmosphere, phenylacetylene (204 mg, 2 mmol) was added dropwise at room temperature. After addition, the solution was heated to about 50 ^{o}C for 15 min and then cooled to room temperature. Neat *(R)-tert-butyl 4-(azidomethyl)thiazolidine-3-carboxylate* (244 mg, 1 mmol) was added dropwise. This reaction mixture was stirred under room temperature for 30 min, then 50^{o}C for 15 min. The reaction was quenched with saturated aqueous NH_4Cl and the

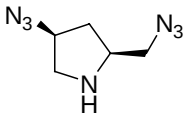
products were extracted using CH_2Cl_2 (5 mL×3). The combined organic phase was dried over anhydrous sodium sulphate and concentrated by rotary evaporator under reduced pressure. The residue was purified by flash chromatograph on silica gel to give Boc-protected **CP-4** as pale yellow oil (310mg, 90% yield).

The Boc-protected **CP-4** was deprotected using 4M HCl dioxane solution (5 mL). Concentration in *vacuo* afforded the hydrogen chlorides salts, which was subsequently neutralized in saturated $NaHCO_3$ solution (5 mL). The aqueous solution was extracted with CH_2Cl_2 (10 mL×3). The combined extracts were dried over anhydrous sodium sulphate, and then concentrated in *vacuo* to give **CP-4** as yellow oil (90% yield). $[\alpha]_D^{rt}$= -10^o, (c=0.6, $CHCl_3$); ^{1}H NMR (300 MHz, $CDCl_3$): δ 2.10 (1H, s), 2.47-2.56 (1H, m), 2.79-2.88 (1H, m), 3.72-3.86 (1H, m), 3.88-.394 (1H, dd, *J*= 2.5 Hz, 2.5 Hz, 9.6 Hz), 3.99-4.06 (1H, dd, *J*= 2.8 Hz, 2.8 Hz, 9.6 Hz), 4.35-4.53 (2H, m), 7.33-7.42 (2H, m), 7.42-7.52 (3H, m), 7.63-7.68 (1H, m); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 36.0, 49.0, 53.3, 64.0, 126.9, 129.0, 129.1, 129.6, 133.0, 138.6; HRMS for $C_{12}H_{15}N_4S^+$ ($M+1^+$), calcd. 247.1012, found 247.1012.



CP-5

The title compound was prepared according to **method A** as white solid (83% yield). $[\alpha]_D^{rt}$ = -120.4^o, (c=0.5, CH_3OH); ^{1}H NMR (300 MHz, $CDCl_3$): δ 1.54 (3H, s), 1.64 (3H, s), 1.73-2.23 (1H, br), 2.80 (1H, t, *J*= 9.8 Hz), 3.15-3.23 (1H, dd, *J*= 6.0 Hz, 5.8 Hz, 10.6 Hz), 3.80-4.02 (1H, m), 4.53-4.61 (1H, dd, *J*= 6.8 Hz, 6.6 Hz, 14.1 Hz), 4.67-4.79 (1H, dd, *J*= 4.9 Hz, 5.1 Hz, 13.9 Hz), 7.28-7.37 (1H, m), 7.37-7.49 (2H, m), 7.78-7.85 (2H, m), 7.91 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 30.6, 31.6, 38.4, 51.6, 62.1, 74.2, 119.6, 124.7, 127.3, 127.9, 129.4, 146.8; HRMS for $C_{14}H_{19}N_4S^+$ ($M+1^+$), calcd. 275.1325, found 275.1329.

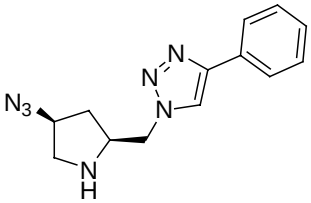


CP-6

To a stirred solution of *(2S,4S)-(tert-Butoxycarbonyl)-4-(p-toluenesulfony--loxy)-2-[(p-toluenesulfonyloxy)methyl]pyrrolidine* (1.44g, 1.74mmol) [*J. Org. Chem.* 1980, *45*, 4728-4739] in DMF (15 mL) was added NaN_3 in portions at rt. The reaction mixture was allowed to warm to 70 °C for 3 hours, and then 90 °C for 5 hours. After removal of solvent under reduced pressure, the residue was diluted in a mixture of H_2O (50 mL) and ethyl acetate (15 mL). The aqueous layer was extracted by ethyl acetate (10 mL×3). The combined organic phase was dried over anhydrous sodium sulphate and concentrated by rotary evaporator. The residue was purified by flash chromatograph on silica gel to afford **Boc-protected CP-6** as colorless oil (626 mg, 86% yield).

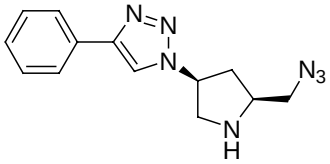
Boc-protected CP-6 from the former step (267 mg, 1 mmol) was deprotected in a mixture of CH_2Cl_2 (2 mL) and TFA (2 mL). Concentration in *vacuo* gave the TFA salts, which was subsequently neutralized in saturated $NaHCO_3$ solution (5 mL). The aqueous solution was extracted with CH_2Cl_2 (10 mL×3). The combined organic layer was dried with anhydrous sodium sulphate and concentrated in *vacuo* to afford **CP-6** as yellow oil (166mg, 99% yield). $[\alpha]_D^{rt}$= +18°, (c=0.3, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.52-1.62 (1H, m), 1.84 (1H, s), 2.17-2.30 (1H, m), 2.27-3.11 (2H, m), 3.26-3.42 (3H, m), 3.98-4.08 (1H, m); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 35.3, 52.6, 55.5, 57.3, 61.5; HRMS for $C_5H_{10}N_7^+$ ($M+1^+$), calcd. 168.0992, found 168.0993.

The "click reaction" between **Boc-protected CP-6** with phenylacetylene afforded simultaneously three products, i.e. the Boc-protected **CP-7, CP-8** and **CP-9** with 19%, 14%, 40% yield, respectively. Those Boc-protected products were deprotected using the standard procedure to give the final products **CP-7**, **CP-8** and **CP-9**.



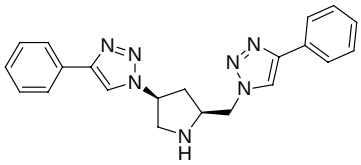
CP-7

Yellow solid. $[\alpha]_D^{rt}$= +38.5°, (c=0.36, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ1.58-1.68 (1H, m), 2.06 (1H, s), 2.22-2.38 (1H, m), 2.96-3.20 (2H, m), 3.64-3.78 (1H, m), 3.98-4.10 (1H, m), 4.26-4.39 (1H, m), 4.42-4.58 (1H, m), 7.27-7.37 (1H, m), 7.37-7.47 (2H, t, *J*= 7.2 Hz), 7.78-7.87 (2H, d, *J*= 7.4 Hz), 7.90 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 35.3, 52.2, 55.1, 57.1, 61.1, 120.7, 125.7, 128.1, 128.8, 130.6, 147.6; HRMS for $C_{13}H_{16}N_7^+$ ($M+1^+$), calcd. 270.1462, found 270.1463.



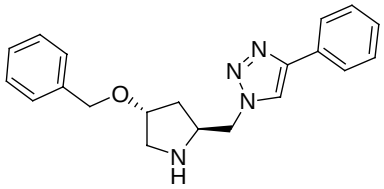
CP-8

Yellow solid. $[\alpha]_D^{rt}$= +16.0°, (c=0.5, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ1.90-2.09 (3H, m), 2.58-2.69 (1H, m), 3.32-3.60 (4H, m), 5.15-5.25 (1H, m), 7.29-7.37 (1H, m), 7.38-7.48 (2H, t, *J*= 7.2 Hz), 7.84 (2H, d, *J*=7.3 Hz), 8.01 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 36.6, 53.6, 55.1, 57.8, 60.6, 118.1, 125.7, 128.2, 128.8, 130.6, 130.6, 148.1; HRMS for $C_{13}H_{16}N_7^+$ ($M+1^+$), calcd. 270.1462, found 270.1465.



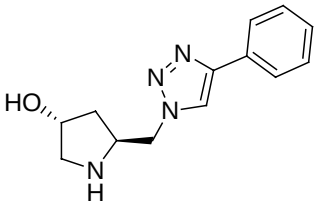
CP-9

White solid. $[\alpha]_D^{rt}$= +16.7°, (c=0.48, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ2.05-2.17 (2H, m), 2.65-2.78 (1H, m), 3.29-3.38 (1H, dd, *J*= 3.6 Hz, 3.6 Hz, 11.5 Hz), 3.38-4.48 (1H, dd, *J*= 6.4 Hz, 6.4 Hz, 11.5 Hz), 3.81-3.92 (1H, m), 4.46-4.67 (2H, m), 5.11-5.23 (1H, m), 7.29-7.46 (6H, m), 7.74-7.87 (5H, m), 7.93 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 35.2, 52.5, 53.2, 56.7, 59.3, 117.1, 119.9, 124.7, 127.1, 127.2, 127.8, 127.9, 129.4, 146.7, 147.1; HRMS for $C_{21}H_{22}N_7^+$ ($M+1^+$), calcd. 372.1931, found 372.1931.



CP-10

Prepared according to **method A** as colorless oil (20% yield, 79% of the starting materials were recycled). $[\alpha]_D^{rt}$= +6.0°, (c=0.67, $CHCl_3$); ^{1}H NMR (300 MHz, $CDCl_3$): δ1.39-1.58 (1H, m), 1.97-2.15 (2H, m), 2.75-2.85 (1H, dd, *J*= 4.0 Hz, 4.2 Hz, 12.3 Hz), 2.95-3.06 (1H, m), 3.72-3.84 (1H, m), 3.95-4.05 (1H, m), 4.10-4.20 (1H, dd, *J*= 7.4 Hz, 7.4 Hz, 14.1 Hz), 4.30-4.44 (3H, m), 7.13-7.28 (5H, m), 7.28-7.40 (3H, m), 7.72-7.78 (2H, m), 7.88 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 34.6, 51.1, 51.3, 54.1, 55.8, 69.7, 78.8, 119.6, 124.7, 126.5, 126.6, 126.7, 127.0, 127.4, 127.8, 129.7, 137.1, 146.5; HRMS for $C_{20}H_{23}N_4O^+$ ($M+1^+$), calcd. 335.1866, found 335.1867.

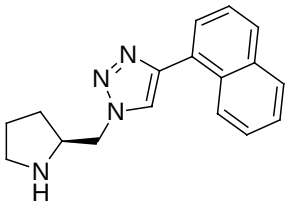


CP-11

(2S,4R)-tert-butyl 4-(benzyloxy)-2-((4-phenyl-1H-1,2,3-triazol--1-yl)methyl)pyrrolidine-1-carboxylate (515 mg, 1.19 mmol) was treated with Pd/C (100 mg) and methanol (15 mL) under hydrogen. The reaction mixture was stirred at 60 °C until the substrate was completely consumed by TLC. The mixture was filtered through Celite and the resulting solution was concentrated in *vacuo* to give **Boc-CP-11** as colorless oil (125 mg, 32% yield, starting materials were recycled in 65% yield).

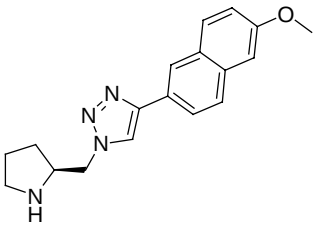
The **Boc- CP-11** obtained from former steps was deprotected in a mixture of CH_2Cl_2 (2 mL) and TFA (2 mL). After removal of solvents in *vacuo*, the resulting TFA salt was subsequently neutralized in saturated $NaHCO_3$ solution (5 mL). The aqueous solution was extracted with CH_2Cl_2 (10 mL×3). The combined extracts were dried over anhydrous sodium sulphate. The organic solvent was concentrated in *vacuo* to afford **CP-11** as colorless oil (82mg, 92% yield). $[\alpha]_D^{rt}$= +8.0°, (c=0.25,

$CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ1.57-1.72 (1H, m), 1.94-2.06 (1H, m), 2.06-2.33 (3H, m), 2.95 (1H, s), 3.89-4.02 (1H, m), 4.22-4.32 (1H, dd , *J*= 7.2 Hz, 7.5 Hz, 13.8 Hz), 4.37-4.60 (2H, m), 7.29-7.38 (1H, m), 7.38-7.49 (2H, m), 7.78-7.88 (2H, m), 7.98 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 29.7, 38.8, 55.0, 56.6, 72.7, 120.7, 125.7, 128.1, 128.9, 130.7, 147.6; HRMS for $C_{13}H_{17}N_4O^+$ ($M+1^+$), calcd. 245.1397, found 245.1399.



CP-12

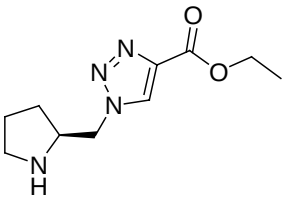
The title compound was prepared according to **method A** as yellow oil (90% yield). $[\alpha]_D^{rt}$= +9.5°, (c=0.42, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.36-1.55 (1H, m), 1.55-1.82 (2H, m), 1.82-1.98 (1H, m), 2.66-2.82 (1H, m), 2.89 (2H, t, *J*= 6.2 Hz), 3.50-3.68 (1H, m), 4.18-4.31 (1H, dd, *J*= 7.9 Hz, 7.9 Hz, 13.6 Hz), 4.37-4.48 (1H, dd, *J*= 4.5 Hz, 4.5 Hz, 13.4 Hz), 7.38-7.54 (3H, m), 7.66-7.73 (1H, m), 7.95 (1H, s), 8.37-8.43 (1H, m); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 24.9, 28.6, 46.0, 54.7, 57.4, 123.1, 124.9, 125.0, 125.5, 126.1, 126.7, 127.7, 127.9, 128.3, 130.6, 133.4, 146.0; HRMS for $C_{17}H_{19}N_4^+$ ($M+1^+$), calcd. 279.1604, found 279.1606.



CP-13

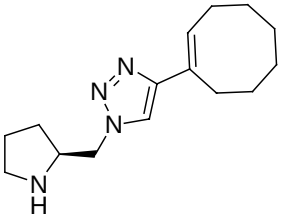
The title compound was prepared according to **method A** as white solid (92% yield). $[\alpha]_D^{rt}$= +10.3°, (c=0.58, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.44-1.62 (1H, m), 1.62-1.88 (2H, m), 1.88-2.04 (1H, m), 2.92-3.02 (1H, m), 3.56-3.76 (1H, br), 3.85-3.94 (3H, m), 4.22-4.37 (1H, m), 4.39-4.51 (1H, m), 7.06-7.14 (2H, m), 7.10-7.18 (2H, m), 7.75 (2H, d, *J*= 8.5 Hz), 7.83-7.89 (1H, m), 8.00-8.06 (1H, m), 8.22 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 24.4, 28.0, 45.5, 54.3, 57.2, 104.7, 118.2, 119.5, 123.1, 123.3, 126.3, 128.0, 128.7, 133.3, 146.7, 156.9; HRMS for $C_{18}H_{21}N_4O^+$ ($M+1^+$), calcd. 309.1710, found 309.1708.

The title compound was prepared according to **method A** as yellow oil (92% yield). $[\alpha]_D^{rt}$= +42.9°, (c=0.42, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.34 (3H, t, *J*= 7.2 Hz), 1.37-1.52 (1H, m), 1.62-1.77 (2H, m), 1.85-2.00 (1H, m), 2.80-3.00 (2H, m), 3.52-3.68 (1H, m), 4.15-4.49 (5H, m), 8.26 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 14.3, 25.5, 29.0, 46.5, 55.3, 57.7, 61.2, 128.4, 139.8, 160.8; HRMS for $C_{10}H_{17}N_4O_2^+$ ($M+1^+$), calcd. 225.1346, found 225.1346.

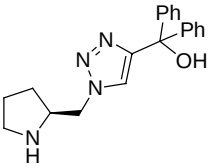


CP-14

The title compound was prepared according to **method A** as yellow solid (85% yield). $[\alpha]_D^{rt}$= +14.5°, (c=0.83, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.31-1.61 (9H, m), 1.61-1.78 (2H, m), 1.78-1.94 (1H, m), 2.11 (1H, s), 2.16-2.30 (2H, m), 2.55 (2H, t, *J*= 6.3 Hz), 2.85 (2H, t, *J*= 6.6 Hz), 3.44-3.58 (1H, m), 4.03-4.17 (1H, dd, *J*= 7.9 Hz, 7.7 Hz, 13.6 Hz), 4.24-4.35 (1H, dd, *J*= 4.5 Hz, 4.3 Hz, 13.8 Hz), 6.38 (1H, t, *J*= 8.3 Hz), 7.53 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 24.4, 25.0, 25.6, 25.7, 26.1, 27.8, 28.0, 29.0, 45.5, 54.3, 57.0, 118.7, 126.4, 129.4, 148.1; HRMS for $C_{15}H_{25}N_4^+$ ($M+1^+$), calcd. 261.2074, found 261.2074.

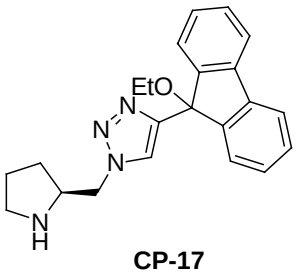


CP-15



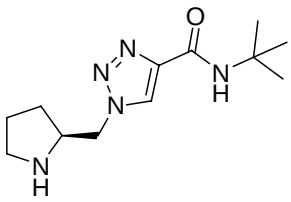
CP-16

The title compound was prepared according to **method A** as yellow solid (90% yield). $[\alpha]_D^{rt}$= +10.7°, (c=0.75, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.23-1.39 (1H, m), 1.51-1.65 (2H, m), 1.70-1.83 (1H, m), 2.69 (2H, t, *J*= 6.8 Hz), 2.90-3.52 (3H, m), 3.96-4.08 (1H, dd, *J*= 7.7Hz, 7.7Hz, 13.6Hz), 4.11-4.21 (1H, dd, *J*= 4.9 Hz, 4.7 Hz, 13.6 Hz), 6.85-7.45 (11H, m); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 25.2, 29.0, 46.3, 55.2, 57.7, 76.5, 123.6, 127.2, 127.3, 127.4, 127.8, 127.9, 146.1, 146.2, 153.9; HRMS for $C_{20}H_{23}N_4O^+$ ($M+1^+$), calcd. 335.1866, found 335.1866.



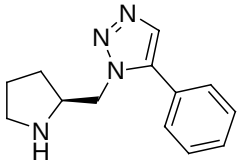
CP-17

The title compound was prepared according to **method A** as yellow oil (89% yield). $[\alpha]_D^{rt}$= +4.8°, (c=0.83, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.00 (3H, t, *J*= 7.2 Hz), 1.24-1.39 (1H, m), 1.51-1.67 (2H, m), 1.70-1.86 (1H, m), 1.90-2.60 (1H, br), 2.69-2.85 (2H, m), 2.97 (2H, q, *J*= 14.1 Hz), 3.34-3.48 (1H, m), 3.90-4.01 (1H, m), 4.15-4.24 (1H, m), 7.14-7.35 (4H, m), 7.39 (1H, s), 7.47-7.55 (1H, m), 7.58 (3H, d, *J*= 7.3 Hz); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 15.7, 25.2, 29.0, 46.4, 55.4, 57.8, 59.2, 83.8, 120.0, 122.3, 125.5, 128.0, 129.3, 140.5, 145.2, 149.7; HRMS for $C_{22}H_{25}N_4O^+$ ($M+1^+$), calcd. 361.2023, found 361.2025.



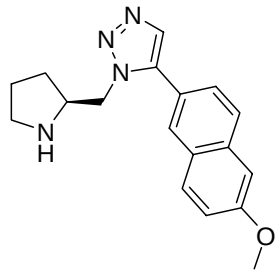
CP-18

The title compound was prepared according to **method A** as white solid (95% yield). $[\alpha]_D^{rt}$= +10.9°, (c=0.92, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.32-1.48 (10H, m), 1.60-1.79 (2H, m), 1.83-1.97 (1H, m), 2.00-2.40 (1H, br), 2.85-2.95 (2H, m), 3.47-.62 (1H, m), 4.15-4.25 (1H, dd, *J*= 7.7 Hz, 7.5 Hz, 13.6 Hz), 4.34-4.43 (1H, dd, *J*= 4.7 Hz, 4.7 Hz, 13.6 Hz), 6.99 (1H, s), 8.15 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 24.5, 27.9, 28.0, 45.5, 50.4, 54.6, 56.7, 124.8, 143.1, 158.5; HRMS for $C_{12}H_{22}N_5O^+$ ($M+1^+$), calcd. 252.1819, found 252.1820.



CP-19

CP-19 was prepared following the similar procedure with that of **CP-4** to give a yellow oil (84% yield). $[\alpha]_D^{rt}$= +3.4°, (c=0.58, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 1.28-1.43 (1H, m), 1.61-1.76 (2H, m), 1.76-1.89 (1H, m), 1.96-2.33 (1H, br), 2.88 (2H, t, *J*= 6.6 Hz), 3.54-3.78 (1H, m), 4.14-4.35 (1H, m), 7.38-7.54 (5H, m), 7.67 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 24.1, 28.1, 45.2, 51.9, 56.8, 126.2, 128.0, 128.1, 128.4, 131.9, 137.3; HRMS for $C_{13}H_{17}N_4^+$ ($M+1^+$), calcd. 229.1448, found 229.1447.

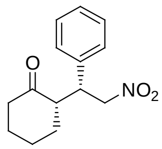


CP-20

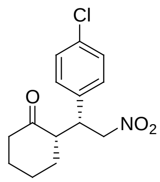
CP-20 was prepared following the similar procedure with that of **CP-4** to give a yellow oil (63% yield). $[\alpha]_D^{rt}$= -3.0°, (c=0.67, $CHCl_3$); ^{1}H NMR (300 MHz, $CDCl_3$): δ 1.31-1.45 (1H, m), 1.61-1.77 (2H, m), 1.77-1.90 (1H, m), 1.94-2.37 (1H, br), 2.91 (2H, t, *J*= 6.8 Hz), 3.61-3.78 (1H, m), 3.95 (3H, s), 4.20-4.40 (2H, m), 7.11-7.25 (2H, m), 7.48 (1H, d, *J*= 8.1 Hz), 7.70-7.86 (3H, m), 7.90 (1H, s); ^{13}C NMR ($CDCl_3$, 75 MHz): δ 24.1, 28.1, 45.3, 52.0, 54.4, 56.8, 104.6, 118.9, 121.0, 125.6, 126.6, 127.5, 128.7, 132.0, 133.6, 137.5, 157.6; HRMS for $C_{18}H_{21}N_4O^+$ ($M+1^+$), calcd. 309.1710, found 309.1710.

Procedure for the Michael reaction: Nitrostyrene (37 mg, 0.25 mmol) and **CP-2** (12 mg, 10 mol%) were mixed with cyclohexanone (0.5 mL, 5 mmol) in the presence of TFA (0.00625 mmol, 0.2 μL) at room temperature (Bulk solution of TFA in cyclohexanone was freshly prepared and employed in the reaction, 20 μL TFA in 50 mL of cyclohexanone). The homogeneous reaction mixture was stirred at room temperature for 18 h. The reaction mixture was directly loaded onto silica gel column to afford the Michael adduct **1** (61 mg, 99%) as white solid: $[\alpha]_D^{rt}$= -15.2 ° (c= 0.5, CH_3OH), *syn/anti=49:1*(by ^{1}H NMR), 92% *ee* (by HPLC on a chiral phase chiralpak AD-H column, λ= 254 nm, *i*PrOH/hexane 10:90, 20 °C , 0.5 mL min^{-1}; t_R= 22.7 min (minor), 29.4 min (major)). All the Michael addition products are known compounds. [2-5]

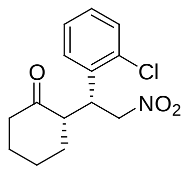
HPLC conditions:



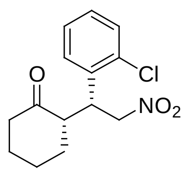
The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=10:90), 25 ^{o}C, 0.5 mL/min; t_R= 22.7 min (minor), 29.4 min (major).



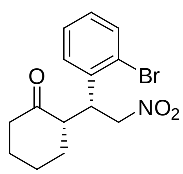
The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=10:90), 20 ^{o}C, 0.5 mL/min; t_R= 27.4 min (minor), 41.6 min (major).



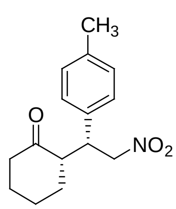
The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=10:90), 20 ^{o}C, 0.5 mL/min; t_R= 27.4 min (minor), 41.6 min (major).



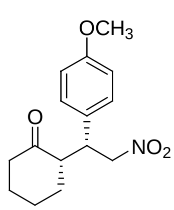
The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=10:90), 20 ^{o}C, 0.5 mL/min; t_R= 27.4 min (minor), 41.6 min (major).



The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=10:90), 20 ^{o}C, 0.5 mL/min; t_R= 21.9 min (minor), 38.3 min (major).

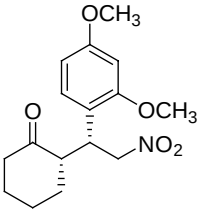


The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=10:90), 20 ^{o}C, 0.5 mL/min; t_R= 18.0 min (minor), 23.5 min (major).

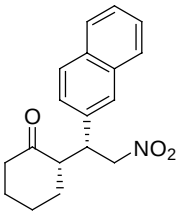


The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=20:80), 20 ^{o}C, 0.5 mL/min; t_R= 19.1 min (minor), 23.9

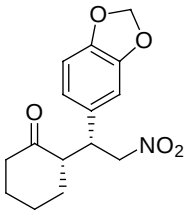
min (major).



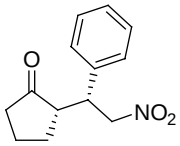
The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=20:80), 20 °C, 0.5 mL/min; t_R= 17.4 min (minor), 18.9 min (major).



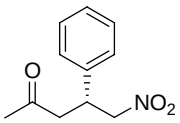
The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=20:80), 20 °C, 0.5 mL/min; t_R= 20.5 min (minor), 23.9 min (major).



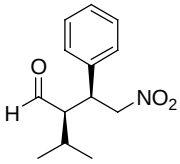
The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=20:80), 20 °C, 0.5 mL/min; t_R= 23.2 min (minor), 24.7 min (major).



The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=20:80), 20 °C, 0.5 mL/min; t_R= 13.7 min (*anti*, major), 15.1 min (*anti*, minor), 16.2 min (*syn*, minor), 20.5 min (*syn*, major).



The enantiomeric excess was determined by HPLC with an AD-H column at 254 nm (2-propanol: hexane=20:80), 20 °C, 0.5 mL/min; t_R= 14.5 min (minor), 15.4 min (major)



The enantiomeric excess was determined by HPLC with an AD-H column at 281 nm (2-propanol: hexane=3:97), 20 °C, 0.5 mL/min; t_R= 17.9 min (major), 21.0 min (minor)

Reference:

[1] Krasinski, A.; Fokin V. V.; Sharpless, K. B. *Org. Lett.* **2004**, *6*, 1237.

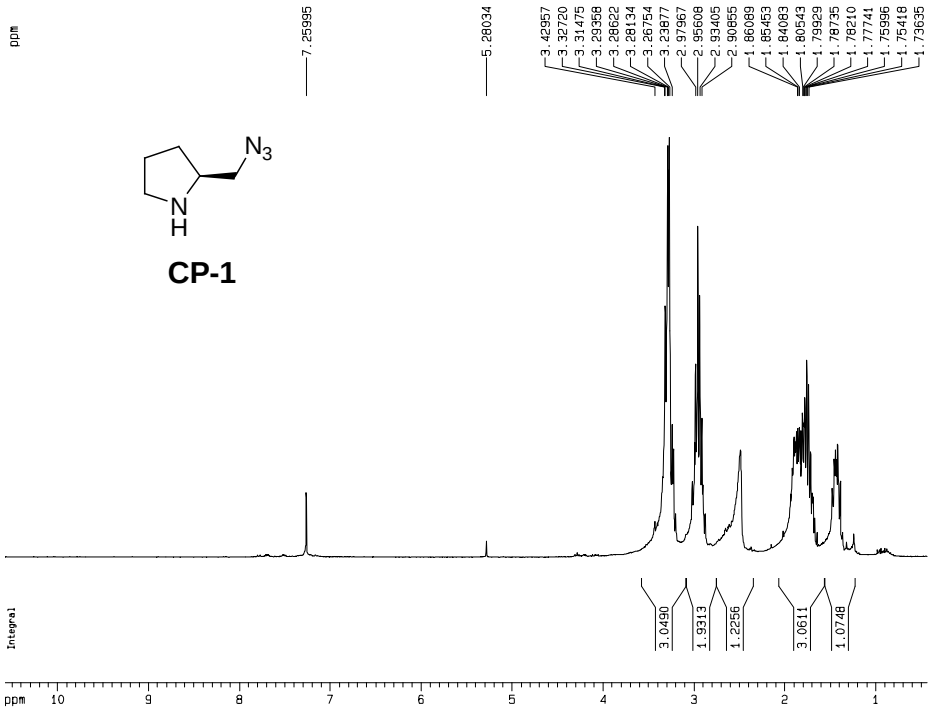
[2] Luo, S.; Mi, X.; Zhang, L.; Liu, S.; Xu, H.; Cheng, J.-P. *Angew. Chem. Int. Ed.* **2006**, *45*, 3093□

[3] (a) Ishii, T.; Fujioka, S.; Sekiguchi, Y.; Kotsuki, H. *J. Am. Chem. Soc*. **2004**, *126*, 9558-9559; (b) Betancort, J. M.; Sakthivel, K.; Thayumanavan, R.; Tanaka, F.; Barbas, C. F. III, *Synthesis* **2004**, 1509-1521. (c) List, B.; Pojarliev, P.; J. Martin, H. *Org. Lett.* **2001**, *3*, 2423-2425.

[4] (a) Cobb, A. J. A.; Longbottom, D. A.; Shaw, D. M.; Ley, S. V. *Chem. Commun.* **2004**, 1808-1809; (b) Cobb, A. J. A.; Shaw, D. M.; Longbottom, D. A.; Gold, J. B.; Ley, S. V. *Org. Biomol. Chem.* **2005**, *3*, 84-96;

[5] (a) Wang, W.; Wang, J.; Li, H. *Angew. Chem. Int. Ed.* **2005,** *44*, 1369; (b) Hayashi, Y.; Gotoh, H.; Hayashi, T.; Shoji, M. *Angew. Chem. Int. Ed*. **2005**, *44*, 4212-4215.

NMR spectra for the clicked catalysts



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EXPNO 12
PROCNO 1

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FIDRES 0.094190 Hz
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DW 81.000 usec
DE 6.00 usec
TE 300.6 K
D1 2.00000000 sec

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PL1 -1.00 dB
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F2 - Processing parameters
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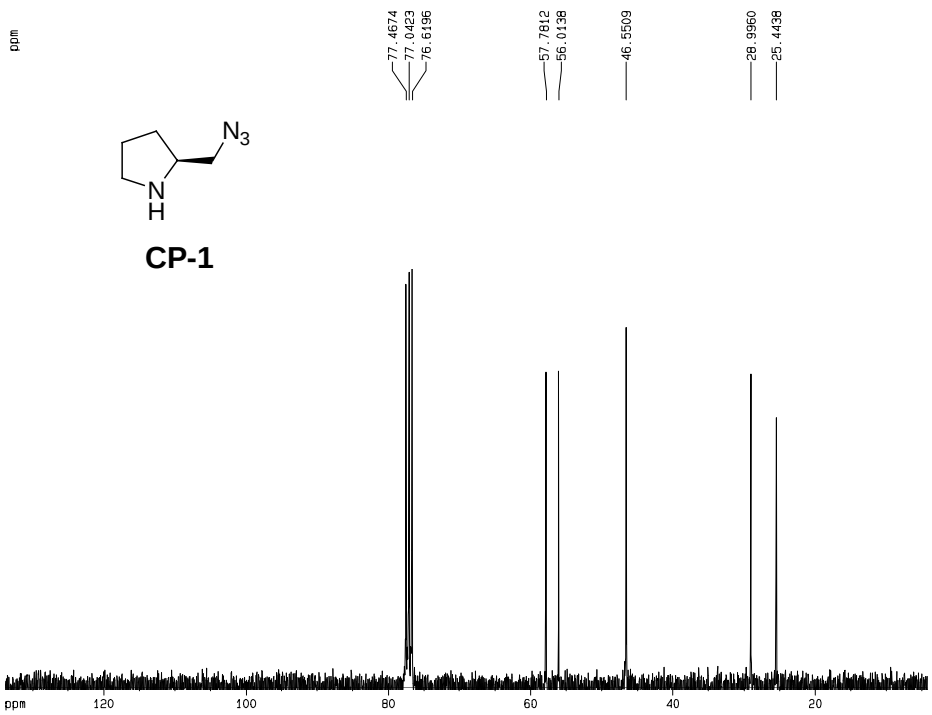

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EXPNO 11
PROCNO 1

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AQ 1.8219508 sec
RG 4597.6
DW 27.800 usec
DE 6.00 usec
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d11 0.03000000 sec
d12 0.00002000 sec

======== CHANNEL f1 ========
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PL1 -1.00 dB
SFO1 75.4752953 MHz

======== CHANNEL f2 ========
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PL2 -1.00 dB
PL12 18.00 dB
PL13 18.00 dB
SFO2 300.1312005 MHz

F2 - Processing parameters
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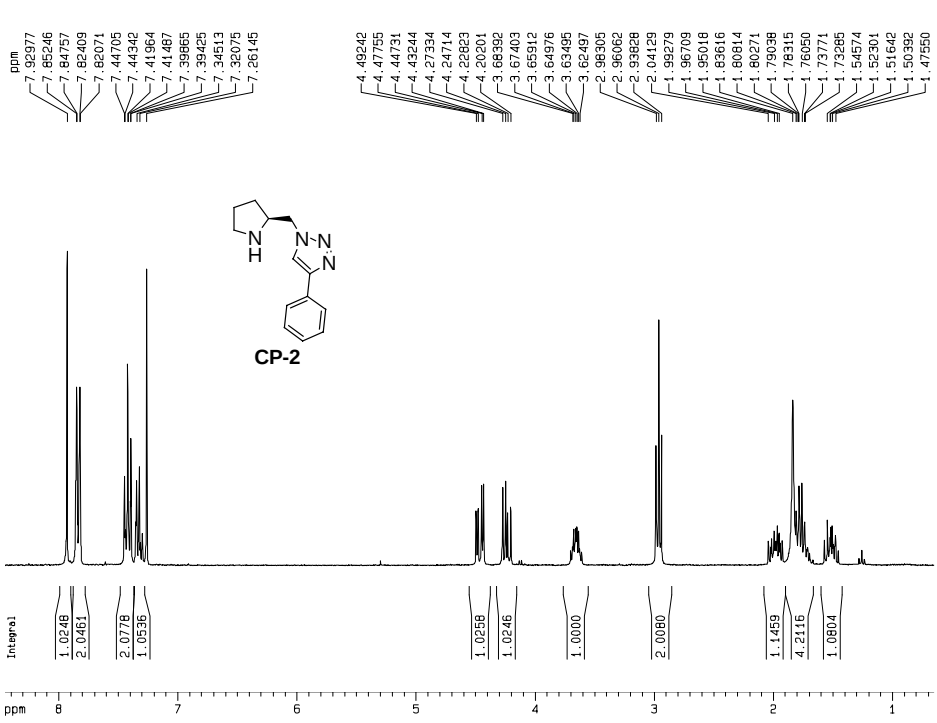


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PROCNO                 1

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D1             2.00000000 sec

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PL1               -1.00 dB
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F2 - Processing parameters
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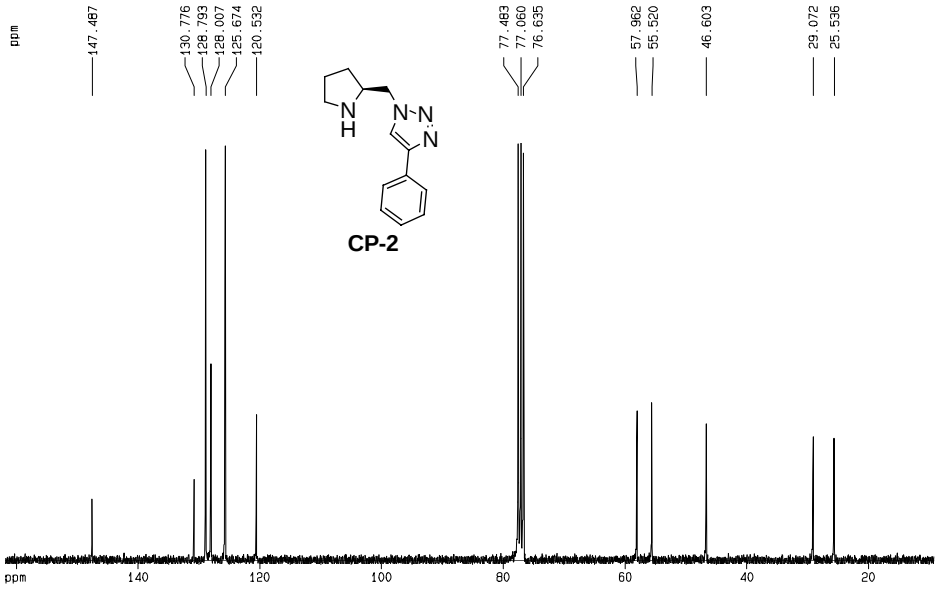
F2P                0.654 ppm
F2               196.21 Hz
PPMCM           0.35461 ppm/cm
HZCM          106.42826 Hz/cm
```




```
Current Data Parameters
NAME         XH-060615-1
EXPNO                 10
PROCNO                 1

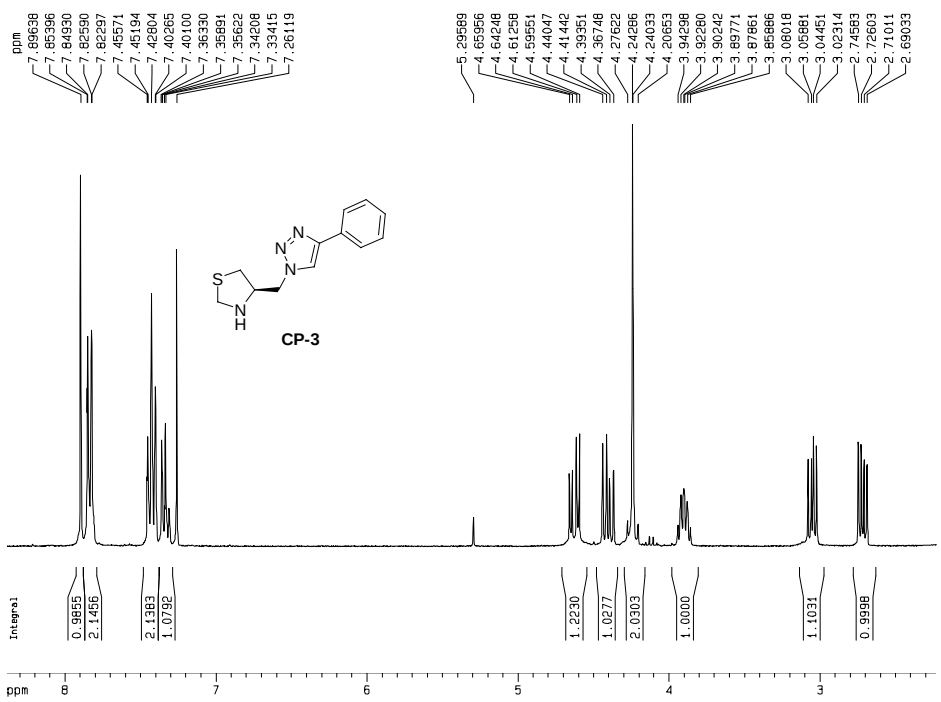
F2 - Acquisition Parameters
Date_           20060615
Time               12.11
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   975
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                1824.6
DW                27.800 usec
DE                 6.00 usec
TE                302.1 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                 9.40 usec
PL1               -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -1.00 dB
PL12              18.00 dB
PL13              18.00 dB
SFO2        300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF           75.4677490 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P              161.894 ppm
F1             12217.76 Hz
F2P                9.198 ppm
F2               694.16 Hz
PPMCM           6.94071 ppm/cm
HZCM          523.79980 Hz/cm
```



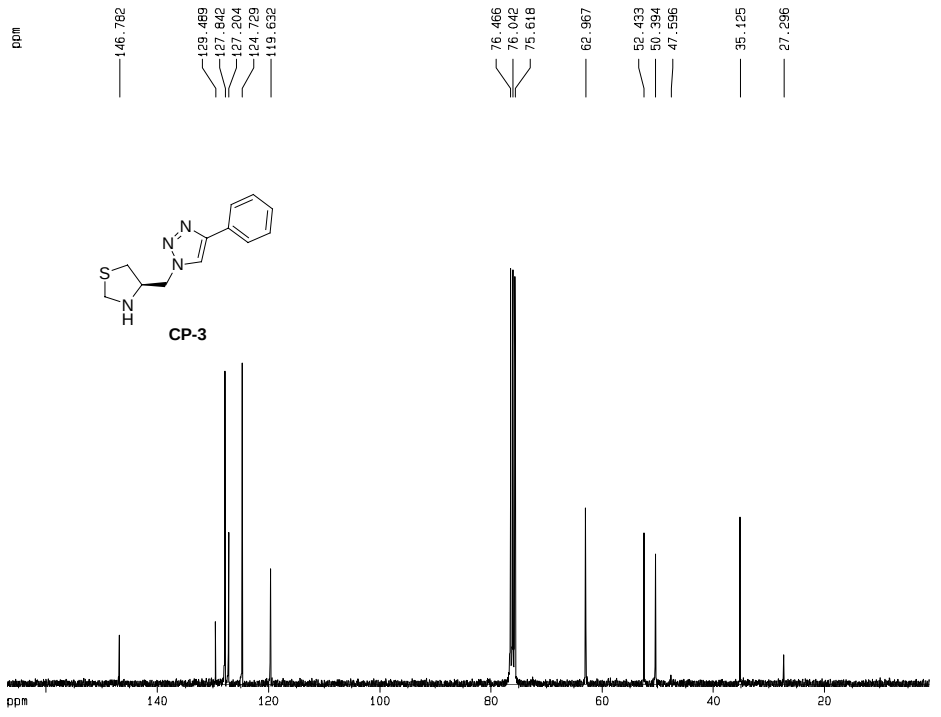

```
Current Data Parameters
NAME         XH-060627-2
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20060627
Time               12.51
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 322.5
DW                81.000 usec
DE                 6.00 usec
TE                301.7 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                 9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF            300.1300062 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                8.385 ppm
F1               2516.71 Hz
F2P                2.231 ppm
F2                669.67 Hz
PPMCM             0.27973 ppm/cm
HZCM             83.95660 Hz/cm
```




```
Current Data Parameters
NAME       XH-ThioCP-1-f
EXPNO                 20
PROCNO                 1

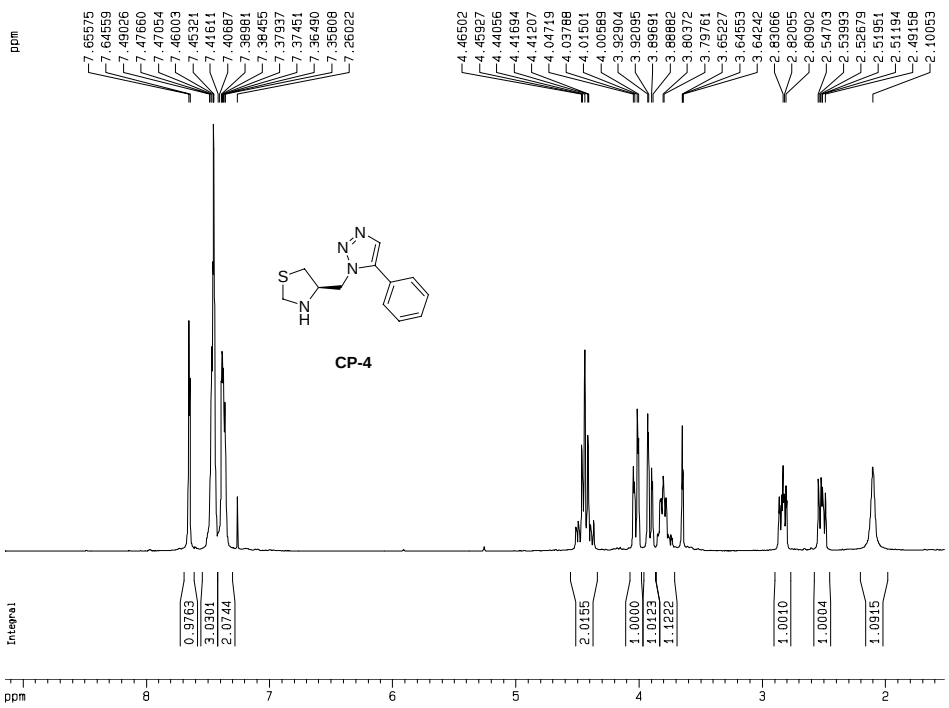
F2 - Acquisition Parameters
Date_           20060305
Time               12.51
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   915
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                 6502
DW                27.800 usec
DE                 6.00 usec
TE                297.3 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.40 usec
PL1                -1.00 dB
SFO1          75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -1.00 dB
PL12               18.00 dB
PL13               18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF            75.4678252 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P               167.113 ppm
F1              12611.66 Hz
F2P                1.130 ppm
F2                85.26 Hz
PPMCM             7.54470 ppm/cm
HZCM            569.38196 Hz/cm
```



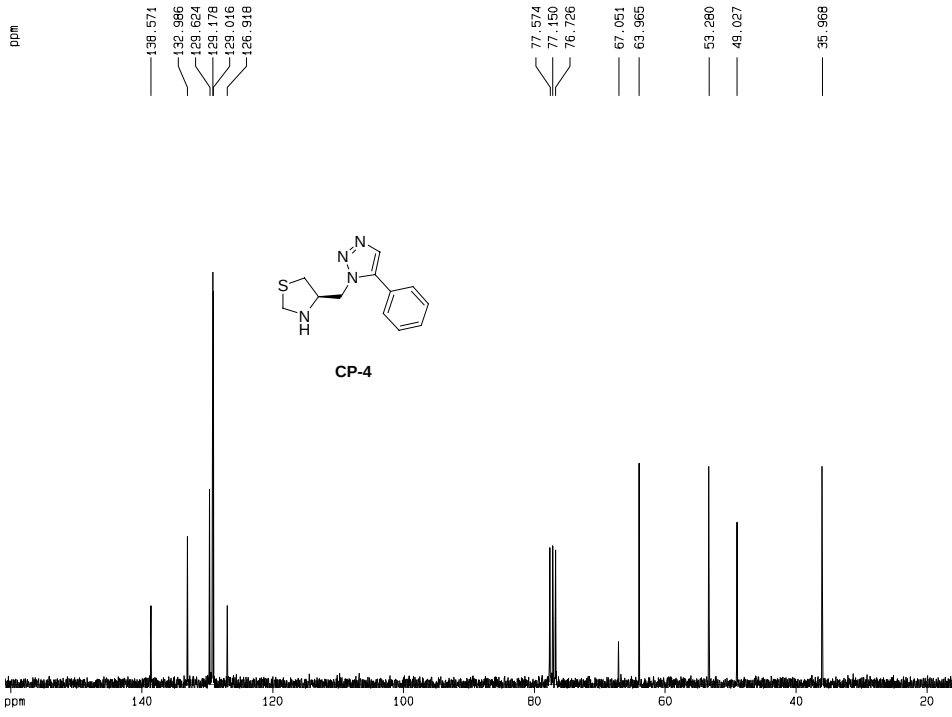

```
Current Data Parameters
NAME          XH-060316-2
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20060316
Time                13.39
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 101.6
DW                81.000 usec
DE                 6.00 usec
TE                299.5 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                  9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF            300.1300062 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                9.151 ppm
F1              2746.56 Hz
F2P                1.524 ppm
F2               457.30 Hz
PPMCM          0.34671 ppm/cm
HZCM          104.05750 Hz/cm
```




```
Current Data Parameters
NAME          XH-060316-2
EXPNO                  11
PROCNO                  1

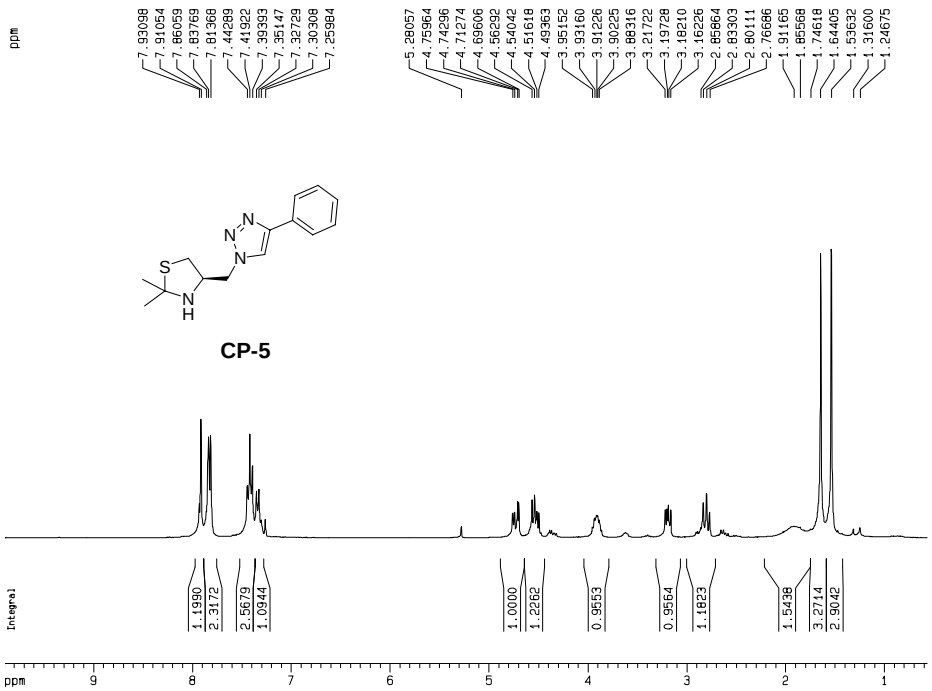
F2 - Acquisition Parameters
Date_           20060316
Time                13.41
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                    41
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                3649.1
DW                27.800 usec
DE                 6.00 usec
TE                299.7 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                  9.40 usec
PL1                -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                   1H
PCPD2              80.00 usec
PL2                -1.00 dB
PL12               18.00 dB
PL13               18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF            75.4677490 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 24.00 cm
CY                 10.00 cm
F1P              160.965 ppm
F1             12147.68 Hz
F2P                7.129 ppm
F2              538.00 Hz
PPMCM          6.40984 ppm/cm
HZCM          483.73657 Hz/cm
```



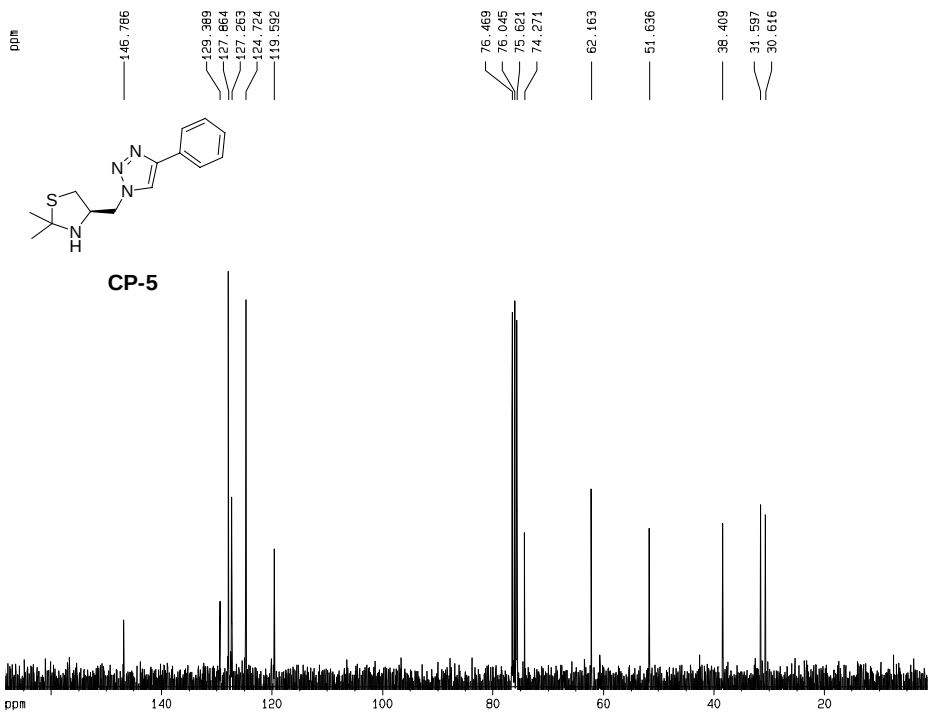

```
Current Data Parameters
NAME         XH-060406-1
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20060405
Time               21.00
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                143.7
DW                81.000 usec
DE                 6.00 usec
TE                298.2 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF           300.1300062 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                9.900 ppm
F1               2971.40 Hz
F2P                0.570 ppm
F2                171.14 Hz
PPMCM          0.42410 ppm/cm
HZCM          127.28462 Hz/cm
```




```
Current Data Parameters
NAME         XH-060406-1
EXPNO                 11
PROCNO                 1

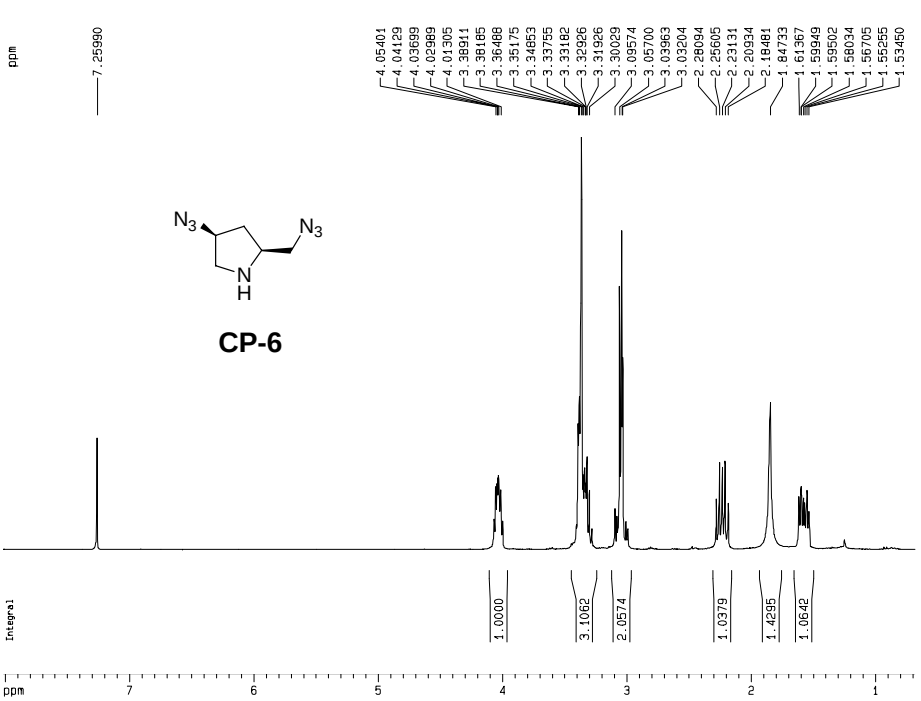
F2 - Acquisition Parameters
Date_          20060405
Time               21.02
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                    49
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                3649.1
DW                27.800 usec
DE                 6.00 usec
TE                298.3 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

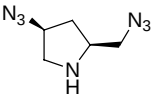
======== CHANNEL f1 ========
NUC1                  13C
P1                 9.40 usec
PL1               -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -1.00 dB
PL12              18.00 dB
PL13              18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF           75.4678262 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P              168.415 ppm
F1             12709.92 Hz
F2P                1.379 ppm
F2               104.11 Hz
PPMCM          7.59252 ppm/cm
HZCM          572.99133 Hz/cm
```





CP-6

```
Current Data Parameters
NAME                 XH-060605-1
EXPNO                         10
PROCNO                         1

F2 - Acquisition Parameters
Date_               20060605
Time                   13.25
INSTRUM                av300
PROBHD   5 mm DUL 13C-1
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                6172.839 Hz
FIDRES             0.094190 Hz
AQ                 5.3084660 sec
RG                     228.1
DW                  81.000 usec
DE                   6.00 usec
TE                   301.6 K
D1                2.00000000 sec

======== CHANNEL f1 ========
NUC1                      1H
P1                     9.30 usec
PL1                   -1.00 dB
SFO1            300.1318534 MHz

F2 - Processing parameters
SI                       32768
SF                300.1300064 MHz
WDW                         EM
SSB                          0
LB                        0.30 Hz
GB                           0
PC                        1.00

1D NMR plot parameters
CX                       22.00 cm
CY                       10.00 cm
F1P                       8.016 ppm
F1                     2405.71 Hz
F2P                       0.683 ppm
F2                      205.02 Hz
PPMCM                 0.33329 ppm/cm
HZCM                100.03147 Hz/cm
```


CP-6

```
Current Data Parameters
NAME                 XH-060605-1
EXPNO                         11
PROCNO                         1

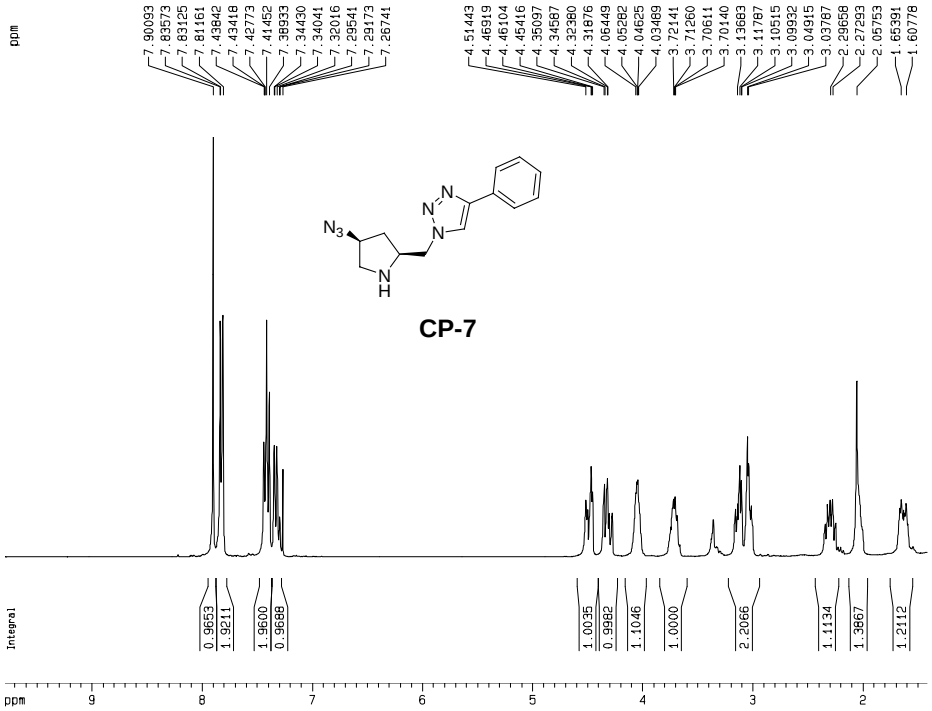
F2 - Acquisition Parameters
Date_               20060605
Time                   13.31
INSTRUM                av300
PROBHD   5 mm DUL 13C-1
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      134
DS                        4
SWH               17985.611 Hz
FIDRES             0.274439 Hz
AQ                 1.8219508 sec
RG                      512
DW                  27.800 usec
DE                   6.00 usec
TE                   301.8 K
D1                2.00000000 sec
d11               0.03000000 sec
d12               0.00002000 sec

======== CHANNEL f1 ========
NUC1                      13C
P1                     9.40 usec
PL1                   -1.00 dB
SFO1            75.4752953 MHz

======== CHANNEL f2 ========
DPDPRG2               waltz16
NUC2                      1H
PCPD2                 80.00 usec
PL2                   -1.00 dB
PL12                  18.00 dB
PL13                  18.00 dB
SFO2            300.1312005 MHz

F2 - Processing parameters
SI                       32768
SF                75.4677490 MHz
WDW                         EM
SSB                          0
LB                        1.00 Hz
GB                           0
PC                        1.40

1D NMR plot parameters
CX                       22.00 cm
CY                       10.00 cm
F1P                     160.758 ppm
F1                    12132.03 Hz
F2P                       0.561 ppm
F2                       42.37 Hz
PPMCM                 7.28166 ppm/cm
HZCM                549.53027 Hz/cm
```



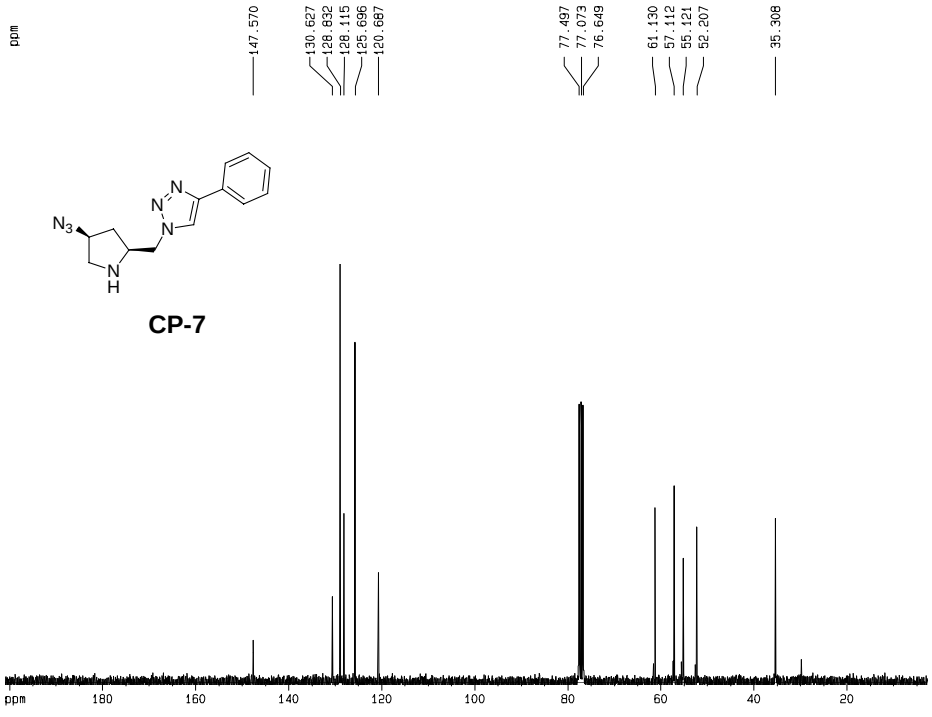

```
Current Data Parameters
NAME          XH-050621-2
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20060522
Time                13.09
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH              6172.839 Hz
FIDRES           0.094190 Hz
AQ               5.3084660 sec
RG                  143.7
DW                 81.000 usec
DE                  6.00 usec
TE                 300.9 K
D1              2.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                   9.30 usec
PL1                 -1.00 dB
SFO1          300.1318534 MHz

F2 - Processing parameters
SI                  32768
SF            300.1300041 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00

1D NMR plot parameters
CX                  22.00 cm
CY                  10.00 cm
F1P                 9.794 ppm
F1                2939.46 Hz
F2P                 1.417 ppm
F2                 425.36 Hz
PPMCM            0.38076 ppm/cm
HZCM           114.27744 Hz/cm
```




```
Current Data Parameters
NAME          XH-050621-2
EXPNO                  11
PROCNO                  1

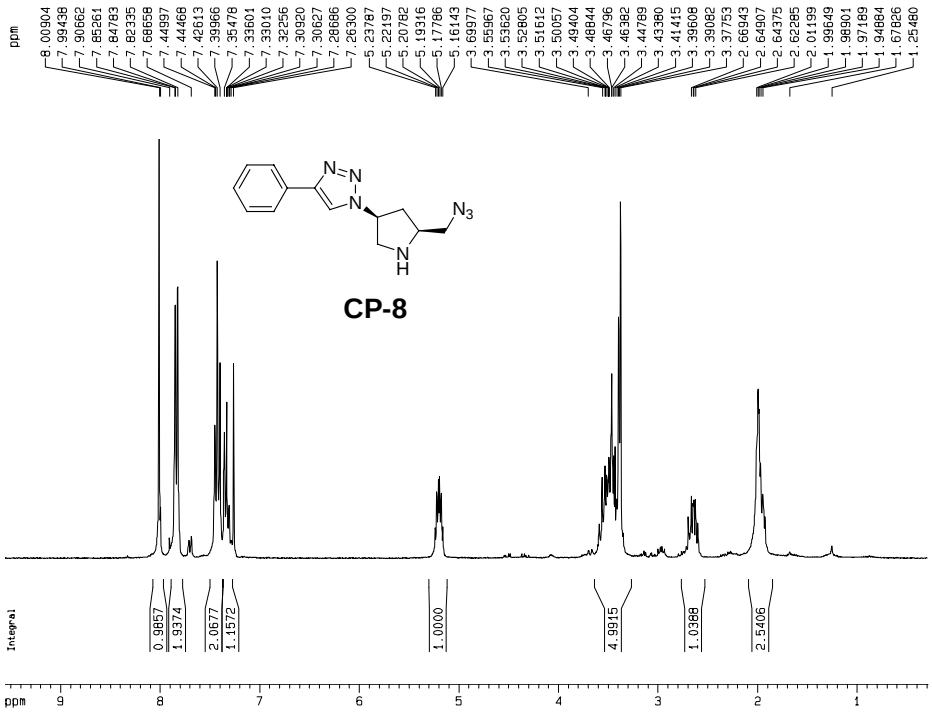
F2 - Acquisition Parameters
Date_            20060522
Time                13.11
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                  65536
SOLVENT             CDCl3
NS                    239
DS                      4
SWH             17985.611 Hz
FIDRES           0.274439 Hz
AQ               1.8219508 sec
RG                  5160.6
DW                 27.800 usec
DE                  6.00 usec
TE                 301.0 K
D1              2.00000000 sec
d11             0.03000000 sec
d12             0.00002000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.40 usec
PL1                 -1.00 dB
SFO1          75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                   1H
PCPD2               80.00 usec
PL2                 -1.00 dB
PL12                18.00 dB
PL13                18.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                  32768
SF            75.4677490 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40

1D NMR plot parameters
CX                  22.00 cm
CY                  10.00 cm
F1P                201.004 ppm
F1               15169.34 Hz
F2P                 2.666 ppm
F2                 201.18 Hz
PPMCM            9.01539 ppm/cm
HZCM           680.37091 Hz/cm
```



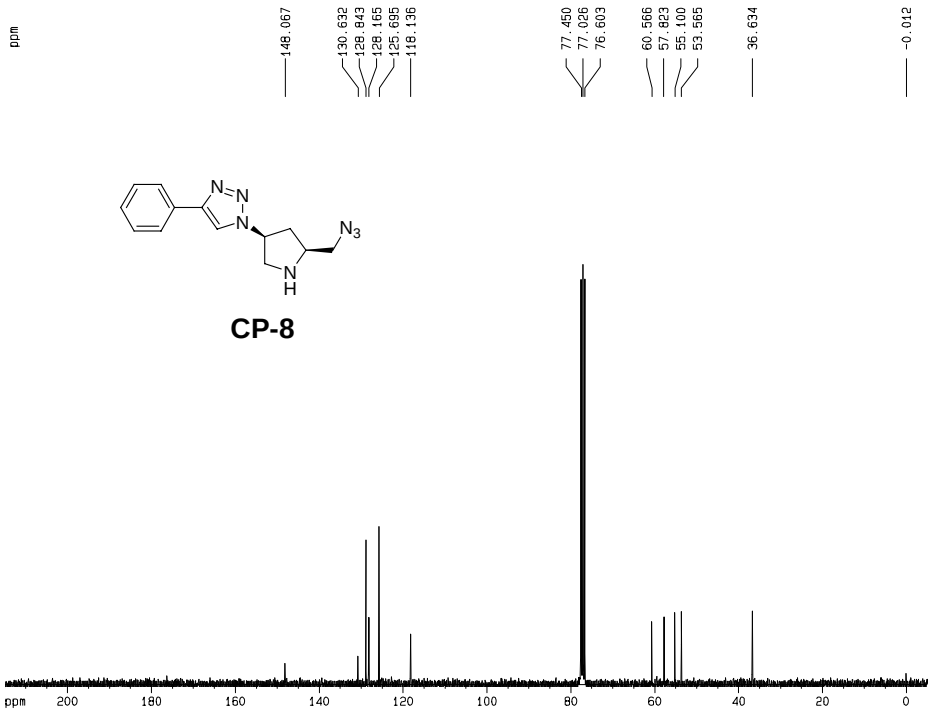

```
Current Data Parameters
NAME         XH-050621-1
EXPNO                 12
PROCNO                 1

F2 - Acquisition Parameters
Date_          20060522
Time              12.30
INSTRUM           av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                228.1
DW               81.000 usec
DE                6.00 usec
TE                300.4 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF          300.1300066 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                9.562 ppm
F1              2869.79 Hz
F2P                0.300 ppm
F2                 89.97 Hz
PPMCM          0.42100 ppm/cm
HZCM          126.35554 Hz/cm
```




```
Current Data Parameters
NAME         XH-050621-1
EXPNO                 13
PROCNO                 1

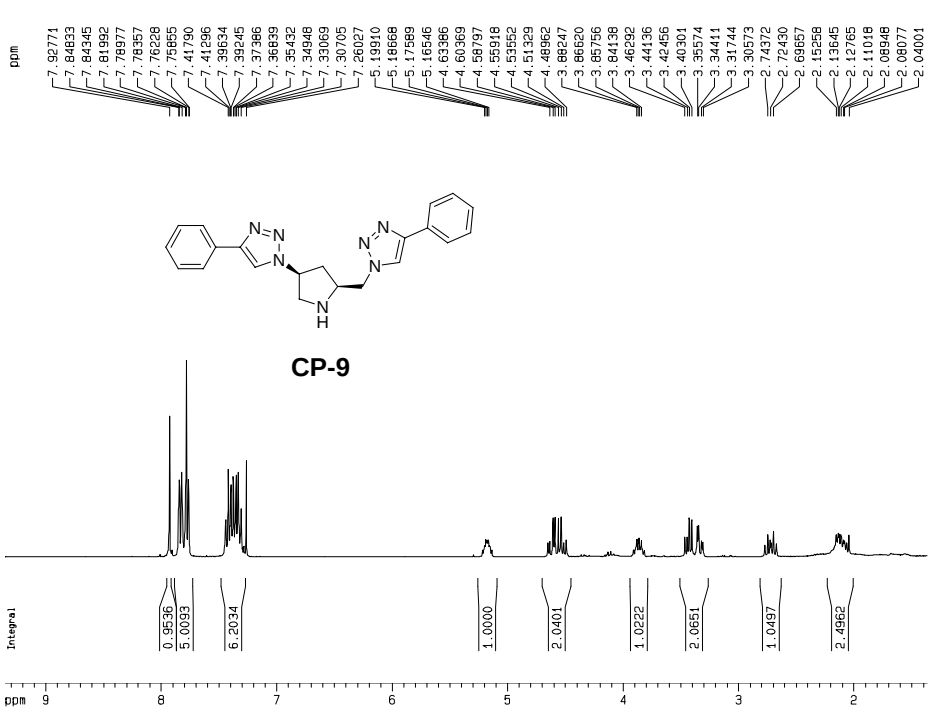
F2 - Acquisition Parameters
Date_          20060522
Time              12.35
INSTRUM           av300
PROBHD   5 mm DUL 13C-1
PULPROG         zgpg30
TD                65536
SOLVENT           CDCl3
NS                  482
DS                    4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                7298.2
DW               27.800 usec
DE                6.00 usec
TE                300.8 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.40 usec
PL1               -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2               -1.00 dB
PL12               18.00 dB
PL13               18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF          75.4677490 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P              215.000 ppm
F1             16225.57 Hz
F2P              -5.000 ppm
F2              -377.34 Hz
PPMCM         10.00000 ppm/cm
HZCM          754.67749 Hz/cm
```



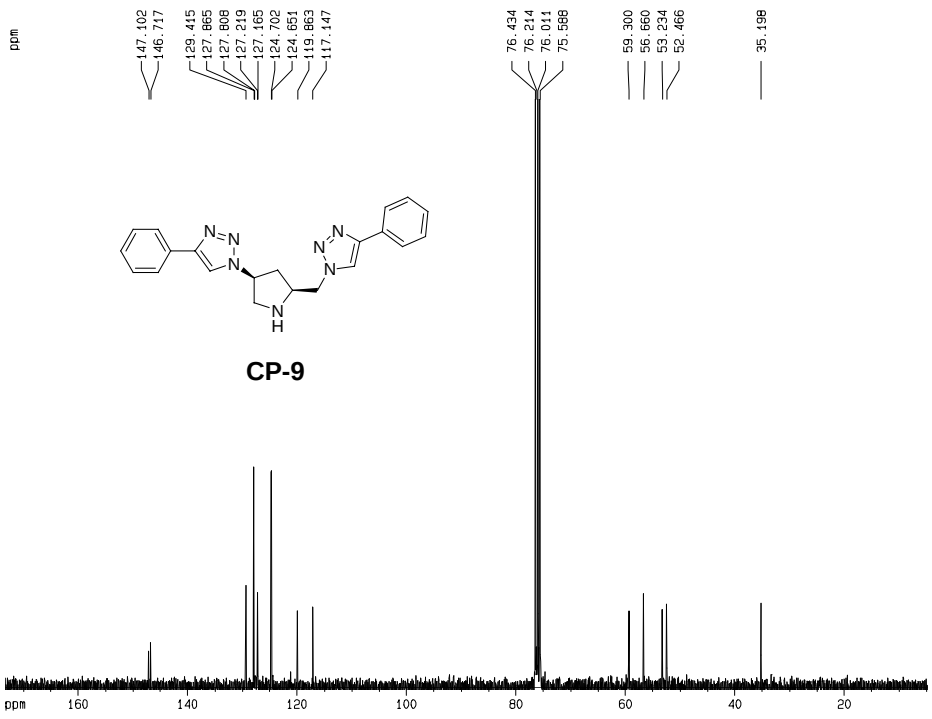

```
Current Data Parameters
NAME          XH-060413-1
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20060414
Time               12.16
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             6172.839 Hz
FIDRES          0.094190 Hz
AQ              5.3084660 sec
RG                 228.1
DW                81.000 usec
DE                 6.00 usec
TE                298.6 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF           300.1300062 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 50.00 cm
F1P                9.356 ppm
F1               2807.88 Hz
F2P                1.365 ppm
F2                409.60 Hz
PPMCM          0.36322 ppm/cm
HZCM          109.01263 Hz/cm
```




```
Current Data Parameters
NAME          XH-060413-1
EXPNO                  11
PROCNO                  1

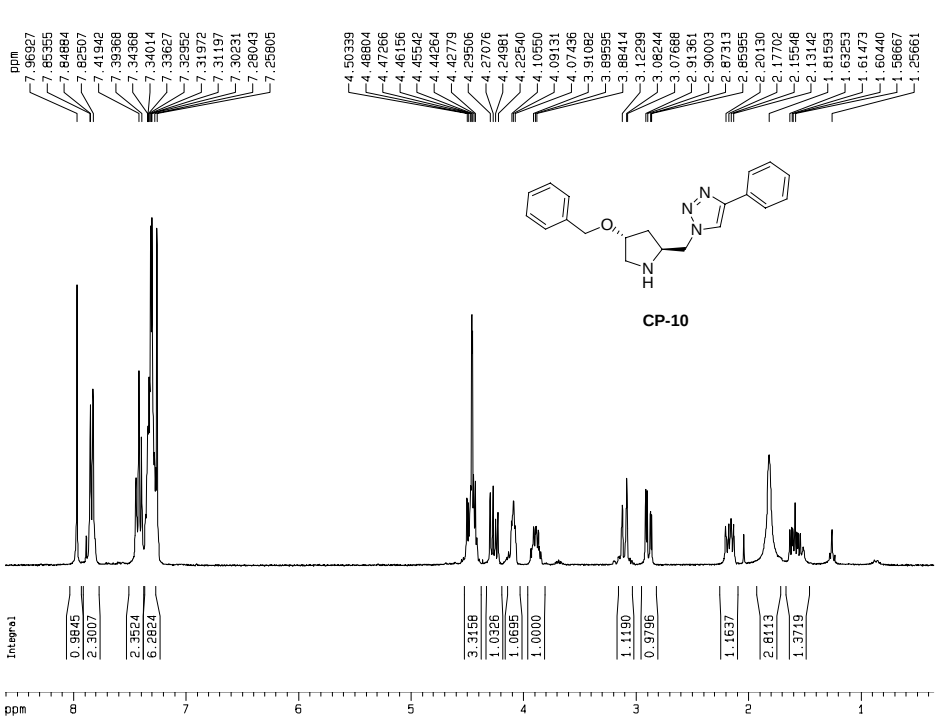
F2 - Acquisition Parameters
Date_           20060414
Time               12.19
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   484
DS                     4
SWH            17985.611 Hz
FIDRES          0.274439 Hz
AQ              1.8219508 sec
RG                 143.7
DW                27.800 usec
DE                 6.00 usec
TE                298.8 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.40 usec
PL1               -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -1.00 dB
PL12              18.00 dB
PL13              18.00 dB
SFO2        300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF           75.4678261 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 20.00 cm
F1P              173.414 ppm
F1             13087.20 Hz
F2P                4.800 ppm
F2              362.28 Hz
PPMCM           7.66427 ppm/cm
HZCM          578.40540 Hz/cm
```



CP-10

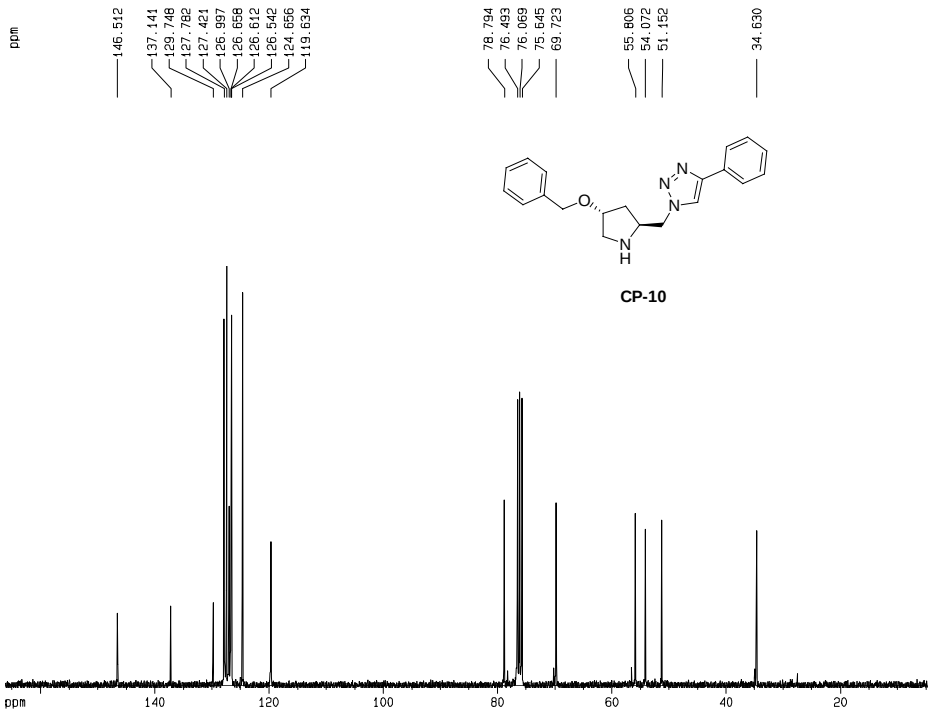
```
Current Data Parameters
NAME         XH-060627-3
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20060627
Time               12.56
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 322.5
DW                81.000 usec
DE                 6.00 usec
TE                301.7 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                  9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF           300.1300070 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                8.612 ppm
F1               2584.60 Hz
F2P                0.353 ppm
F2                105.85 Hz
PPMCM             0.37541 ppm/cm
HZCM            112.67039 Hz/cm
```



CP-10

```
Current Data Parameters
NAME         XH-060526-4
EXPNO                 11
PROCNO                 1

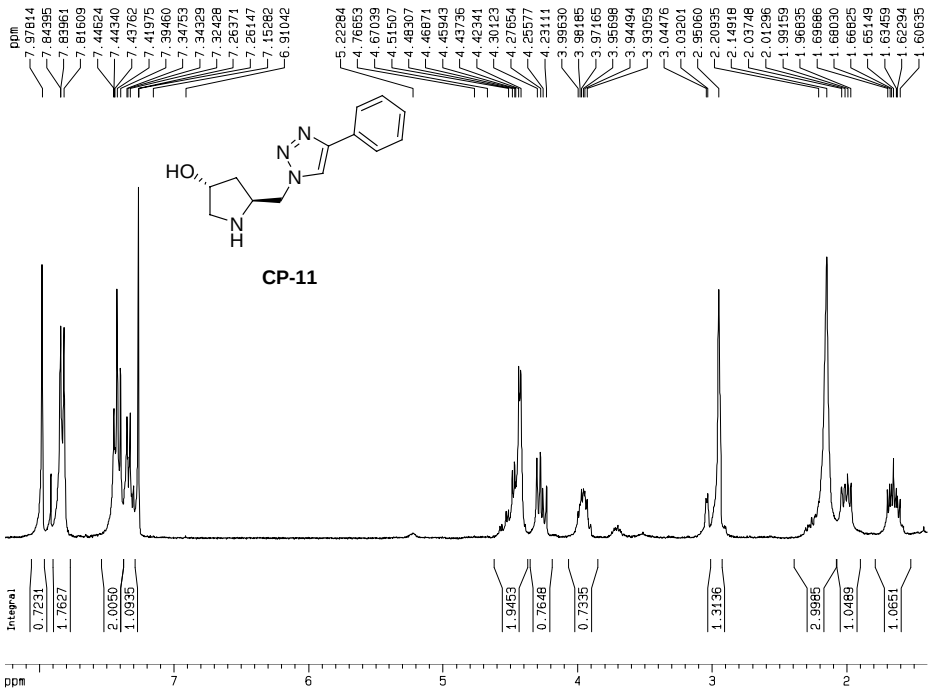
F2 - Acquisition Parameters
Date_           20060526
Time               13.09
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   728
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                 574.7
DW                27.800 usec
DE                 6.00 usec
TE                300.5 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                  9.40 usec
PL1                -1.00 dB
SFO1          75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -1.00 dB
PL12               18.00 dB
PL13               18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF           75.4678275 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P              166.294 ppm
F1             12549.88 Hz
F2P                4.783 ppm
F2               360.95 Hz
PPMCM             7.34143 ppm/cm
HZCM            554.04199 Hz/cm
```



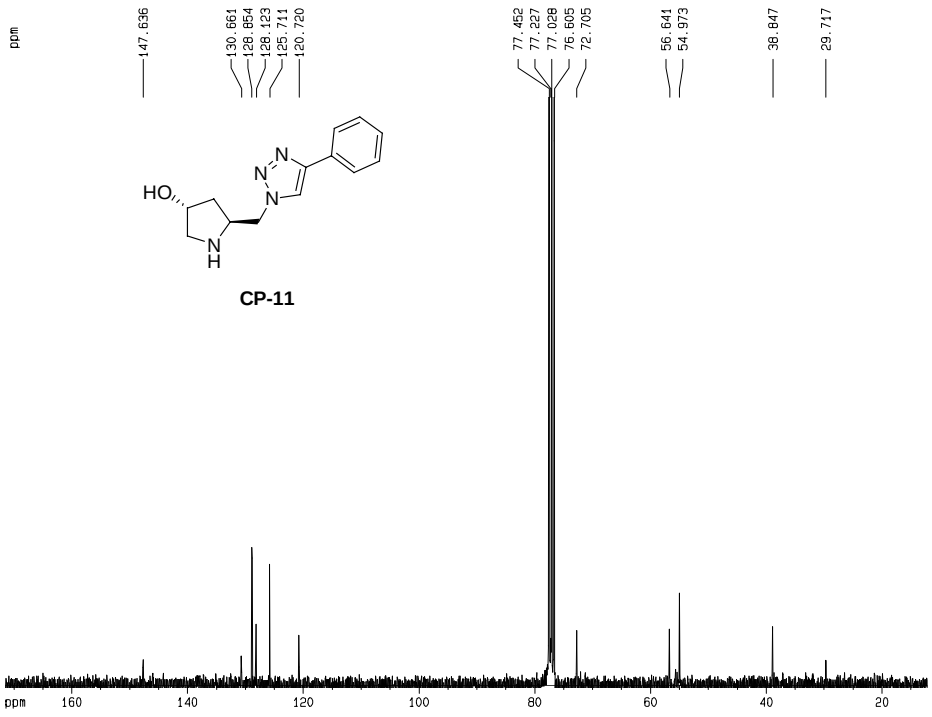

```
Current Data Parameters
NAME         XH-060607-1
EXPNO                 12
PROCNO                 1

F2 - Acquisition Parameters
Date_          20060607
Time               12.17
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 406.4
DW                81.000 usec
DE                 6.00 usec
TE                301.0 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF           300.1300054 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                8.259 ppm
F1              2478.82 Hz
F2P                1.404 ppm
F2               421.30 Hz
PPMCM           0.31161 ppm/cm
HZCM           93.52377 Hz/cm
```




```
Current Data Parameters
NAME         XH-060607-1
EXPNO                 13
PROCNO                 1

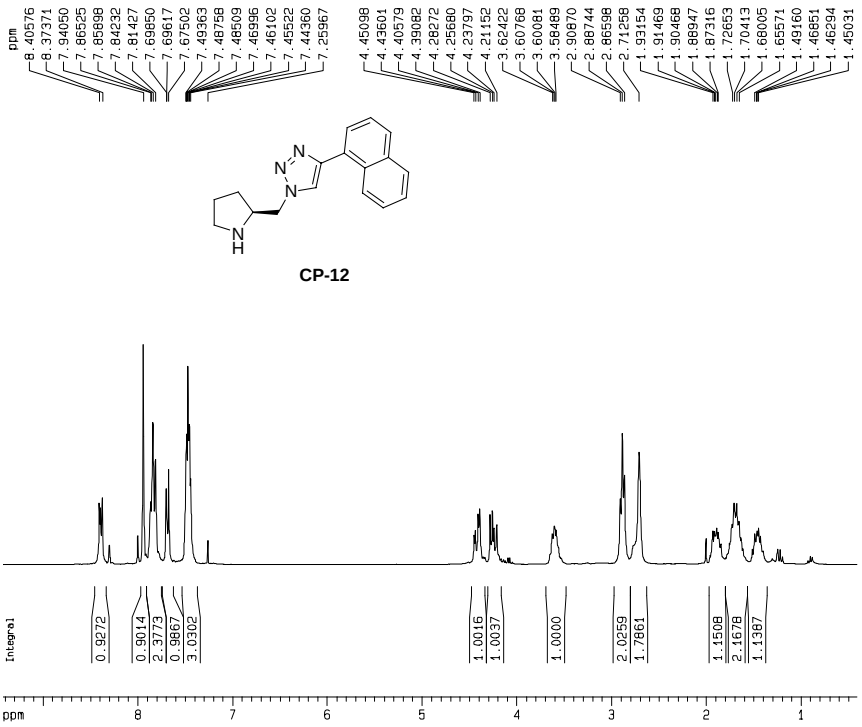
F2 - Acquisition Parameters
Date_          20060607
Time               12.55
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1024
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                 456.1
DW                27.800 usec
DE                 6.00 usec
TE                302.1 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.40 usec
PL1               -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -1.00 dB
PL12              18.00 dB
PL13              18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF           75.4677476 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 20.00 cm
F1P              171.561 ppm
F1             12947.33 Hz
F2P               12.154 ppm
F2              917.22 Hz
PPMCM           7.24579 ppm/cm
HZCM          546.82324 Hz/cm
```



CP-12

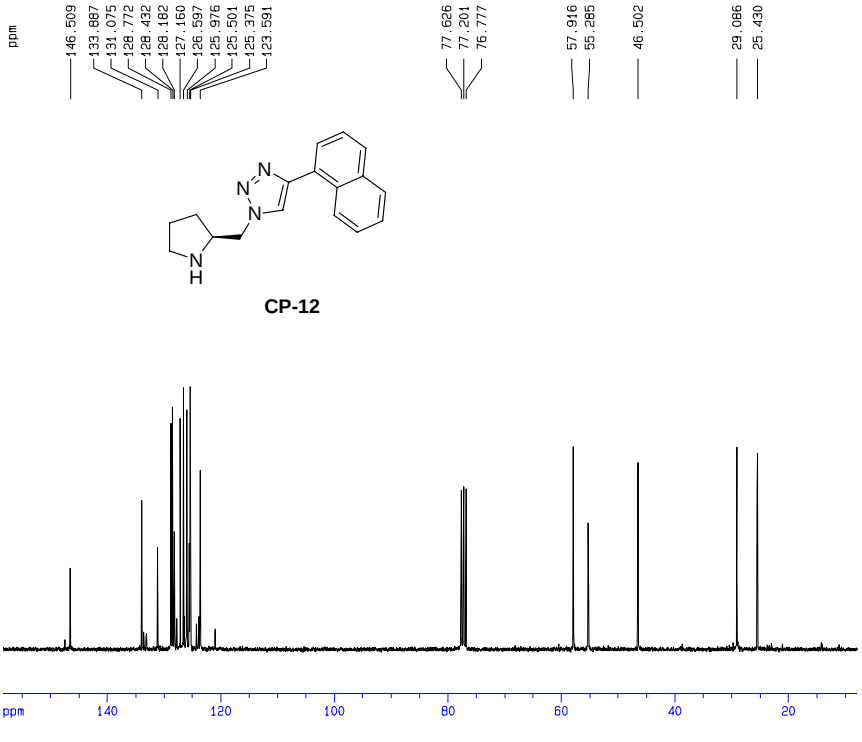
```
Current Data Parameters
NAME          XH-CP-27-f
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20050923
Time               17.39
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                   64
DW               81.000 usec
DE                6.00 usec
TE                298.3 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                9.30 usec
PL1              -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                32768
SF           300.1300062 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                20.00 cm
CY                 5.00 cm
F1P               9.424 ppm
F1             2828.32 Hz
F2P               0.411 ppm
F2              123.45 Hz
PPMCM          0.45062 ppm/cm
HZCM          135.24377 Hz/cm
```



CP-12

```
Current Data Parameters
NAME          XH-CP-27-f
EXPNO                 11
PROCNO                 1

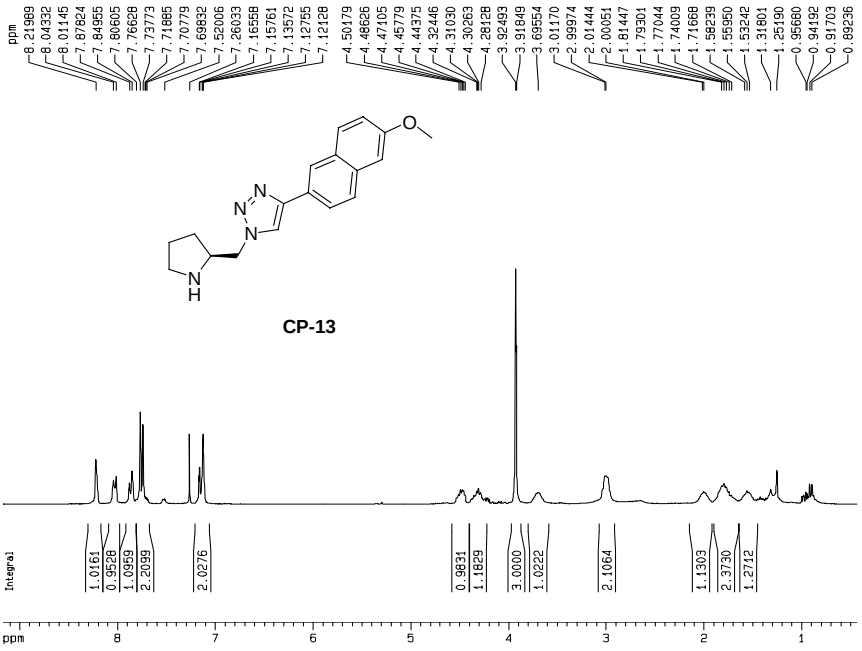
F2 - Acquisition Parameters
Date_           20050923
Time               18.24
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  686
DS                    4
SWH           17985.611 Hz
FIDRES        0.274439 Hz
AQ            1.8219508 sec
RG                 6502
DW               27.800 usec
DE                6.00 usec
TE                298.9 K
D1           2.00000000 sec
D11          0.03000000 sec
D12          0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                9.40 usec
PL1              -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                 1H
PCPD2            80.00 usec
PL2              -1.00 dB
PL12              18.00 dB
PL13              18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                32768
SF           75.4677490 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40

1D NMR plot parameters
CX                20.00 cm
CY                 6.00 cm
F1P             158.390 ppm
F1            11953.37 Hz
F2P               7.927 ppm
F2             598.21 Hz
PPMCM          7.52318 ppm/cm
HZCM          567.75769 Hz/cm
```



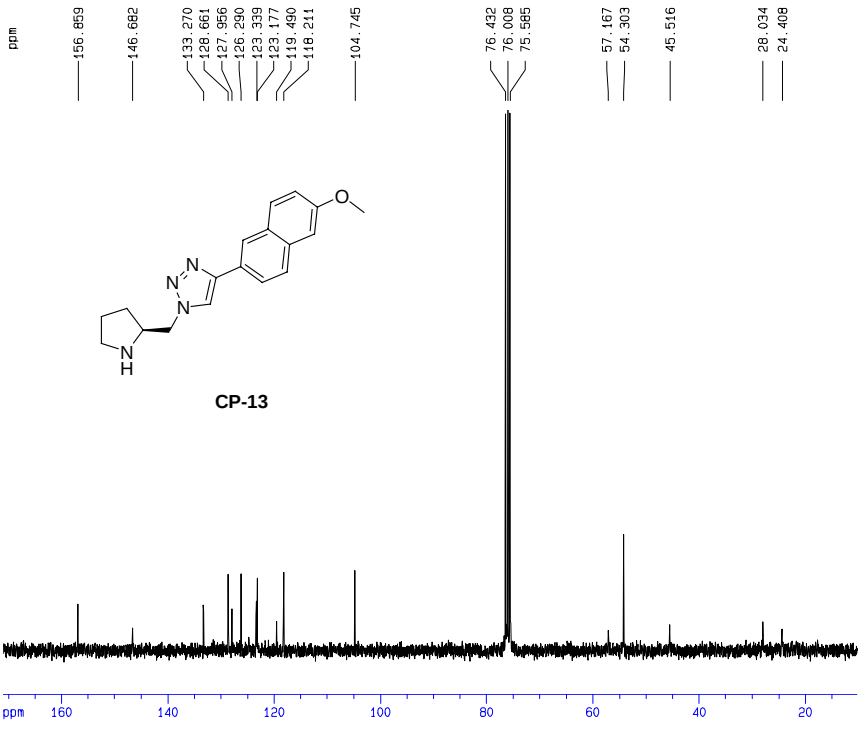

```
Current Data Parameters
NAME          XH-CP-50-f
EXPNO               10
PROCNO               1

F2 - Acquisition Parameters
Date_         20051117
Time             13.09
INSTRUM          av300
PROBHD   5 mm DUL 13C-1
PULPROG           zg30
TD               65536
SOLVENT          CDCl3
NS                  16
DS                   2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                228.1
DW               81.000 usec
DE                6.00 usec
TE               296.9 K
D1            2.00000000 sec

======== CHANNEL f1 ========
NUC1                1H
P1                9.30 usec
PL1              -1.00 dB
SFO1        300.1318534 MHz

F2 - Processing parameters
SI               32768
SF          300.1300062 MHz
WDW                 EM
SSB                  0
LB                0.30 Hz
GB                   0
PC                1.00

1D NMR plot parameters
CX               20.00 cm
CY               30.00 cm
F1P             9.174 ppm
F1             2753.37 Hz
F2P              0.434 ppm
F2             130.26 Hz
PPMCM          0.43700 ppm/cm
HZCM          131.15581 Hz/cm
```




```
Current Data Parameters
NAME          XH-CP-50-f
EXPNO               11
PROCNO               1

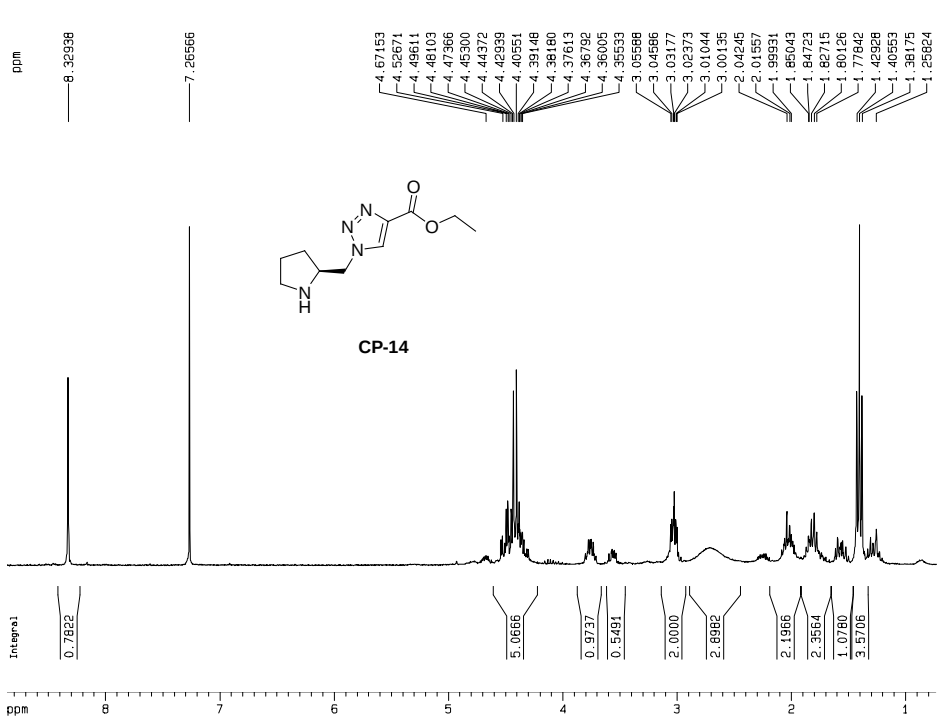
F2 - Acquisition Parameters
Date_         20051117
Time             13.14
INSTRUM          av300
PROBHD   5 mm DUL 13C-1
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 367
DS                   4
SWH          17985.611 Hz
FIDRES        0.274439 Hz
AQ            1.8219508 sec
RG                6502
DW               27.800 usec
DE                6.00 usec
TE               297.2 K
D1            2.00000000 sec
d11           0.03000000 sec
d12           0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                9.40 usec
PL1              -1.00 dB
SFO1        75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2            80.00 usec
PL2              -1.00 dB
PL12             18.00 dB
PL13             18.00 dB
SFO2        300.1312005 MHz

F2 - Processing parameters
SI               32768
SF          75.4678266 MHz
WDW                 EM
SSB                  0
LB                1.00 Hz
GB                   0
PC                1.40

1D NMR plot parameters
CX               20.00 cm
CY               12.50 cm
F1P            171.041 ppm
F1            12908.06 Hz
F2P             10.318 ppm
F2             778.69 Hz
PPMCM          8.03612 ppm/cm
HZCM          606.46851 Hz/cm
```



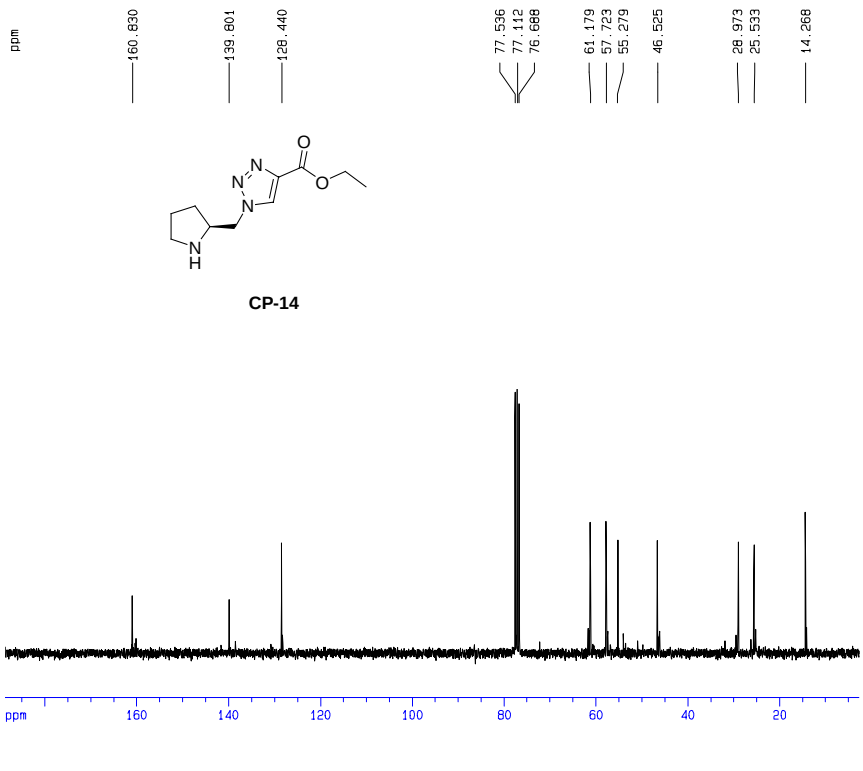

```
Current Data Parameters
NAME         XH-060627-4
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20060627
Time               13.03
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES            0.094190 Hz
AQ                5.3084660 sec
RG                   322.5
DW                  81.000 usec
DE                   6.00 usec
TE                  301.6 K
D1              2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                  9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF            300.1300046 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                8.865 ppm
F1              2660.61 Hz
F2P                0.734 ppm
F2               220.38 Hz
PPMCM            0.36957 ppm/cm
HZCM           110.91994 Hz/cm
```




```
Current Data Parameters
NAME      XH-ClickP-3-fin
EXPNO                  11
PROCNO                  1

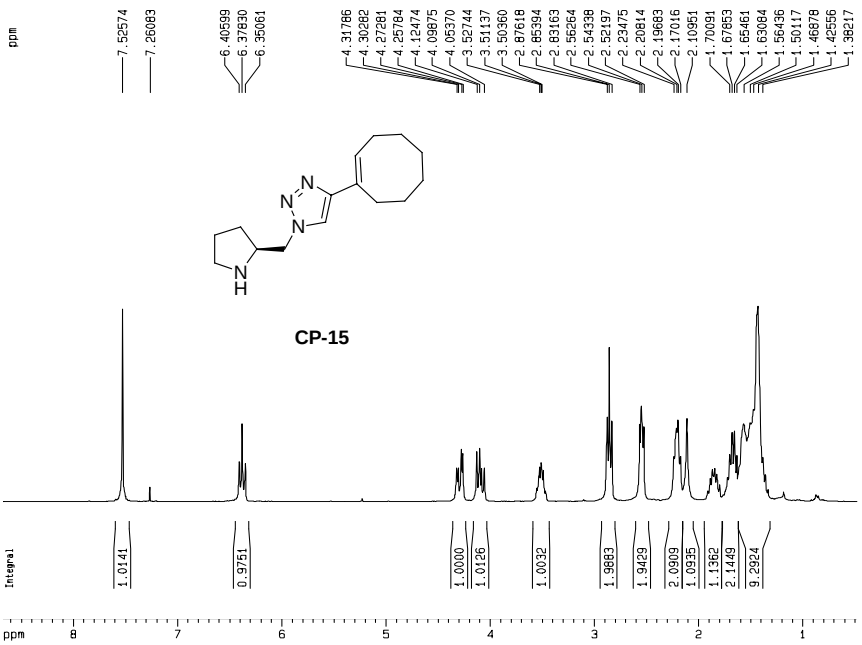
F2 - Acquisition Parameters
Date_           20050813
Time               19.04
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   134
DS                     4
SWH           17985.611 Hz
FIDRES            0.274439 Hz
AQ                1.8219508 sec
RG                 2896.3
DW                 27.800 usec
DE                  6.00 usec
TE                 673.2 K
D1              2.00000000 sec
d11             0.03000000 sec
d12             0.00002000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                  9.40 usec
PL1                -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -1.00 dB
PL12               18.00 dB
PL13               18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF            75.4677490 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 20.00 cm
CY                  6.00 cm
F1P              188.641 ppm
F1             14236.31 Hz
F2P                2.666 ppm
F2               201.18 Hz
PPMCM            9.29876 ppm/cm
HZCM           701.75653 Hz/cm
```



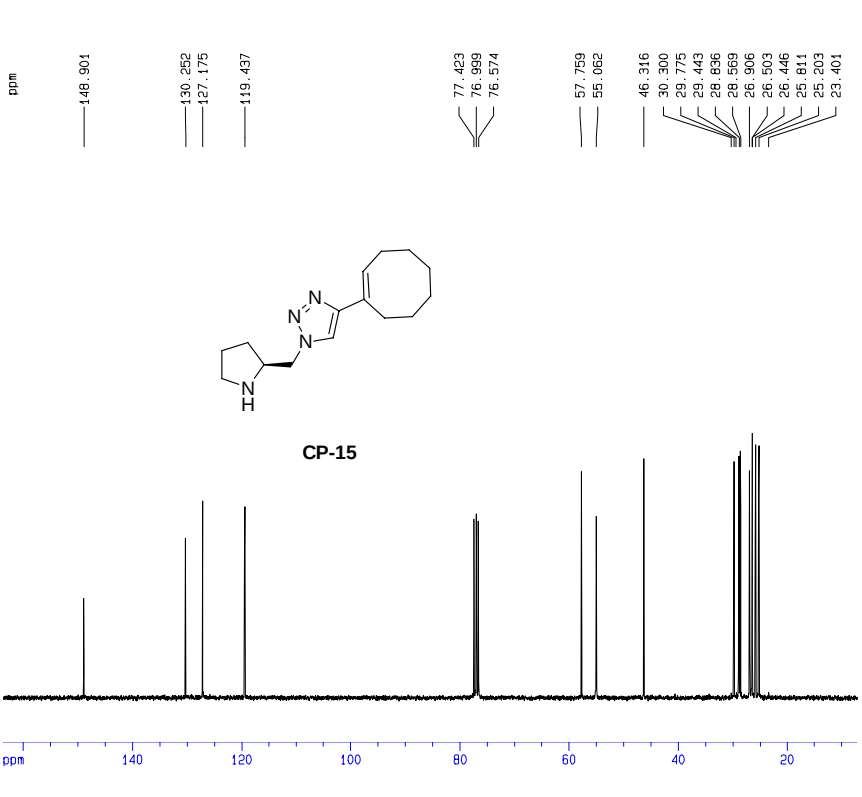
Current Data Parameters
NAME XH-CP14-f
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20050905
Time 19.29
INSTRUM av300
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 6172.839 Hz
FIDRES 0.094190 Hz
AQ 5.3084660 sec
RG 45.3
DW 81.000 usec
DE 6.00 usec
TE 673.2 K
D1 2.00000000 sec

======== CHANNEL f1 ========
NUC1 1H
P1 9.30 usec
PL1 -1.00 dB
SFO1 300.1318534 MHz

F2 - Processing parameters
SI 32768
SF 300.1300063 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
CY 6.00 cm
F1P 8.674 ppm
F1 2603.45 Hz
F2P 0.479 ppm
F2 143.85 Hz
PPMCM 0.40976 ppm/cm
HZCM 122.97987 Hz/cm



Current Data Parameters
NAME XH-CP14-f
EXPNO 11
PROCNO 1

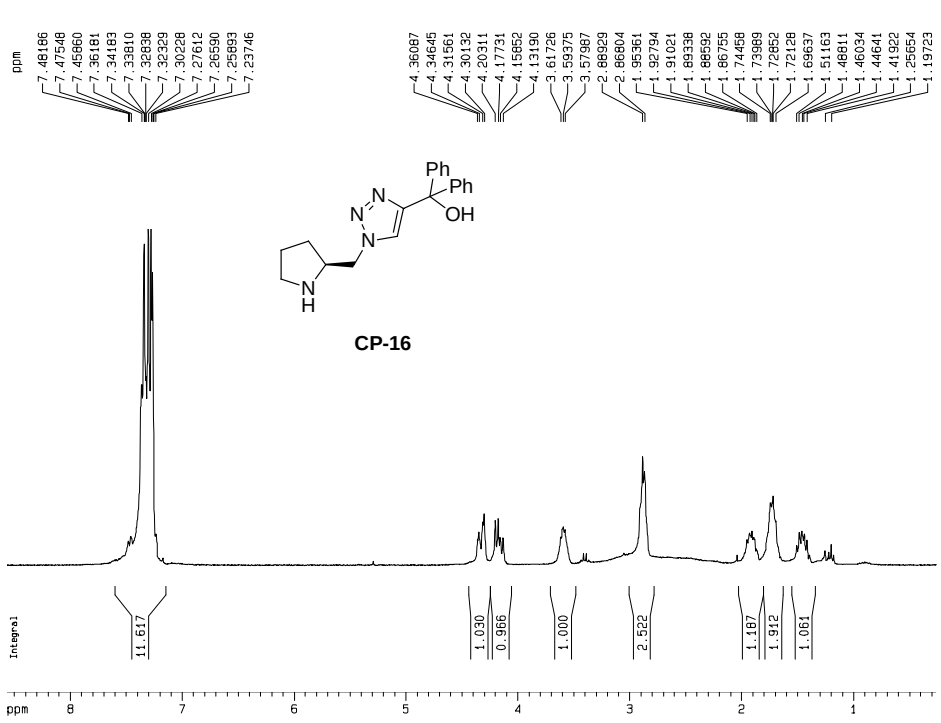
F2 - Acquisition Parameters
Date_ 20050906
Time 19.58
INSTRUM av300
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 429
DS 4
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2580.3
DW 27.800 usec
DE 6.00 usec
TE 673.2 K
D1 2.00000000 sec
D11 0.03000000 sec
D12 0.00002000 sec

======== CHANNEL f1 ========
NUC1 13C
P1 9.40 usec
PL1 -1.00 dB
SFO1 75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 18.00 dB
PL13 18.00 dB
SFO2 300.1312005 MHz

F2 - Processing parameters
SI 32768
SF 75.4677619 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

1D NMR plot parameters
CX 20.00 cm
CY 6.00 cm
F1P 163.743 ppm
F1 12357.35 Hz
F2P 7.230 ppm
F2 545.61 Hz
PPMCM 7.82569 ppm/cm
HZCM 590.58710 Hz/cm



CP-16

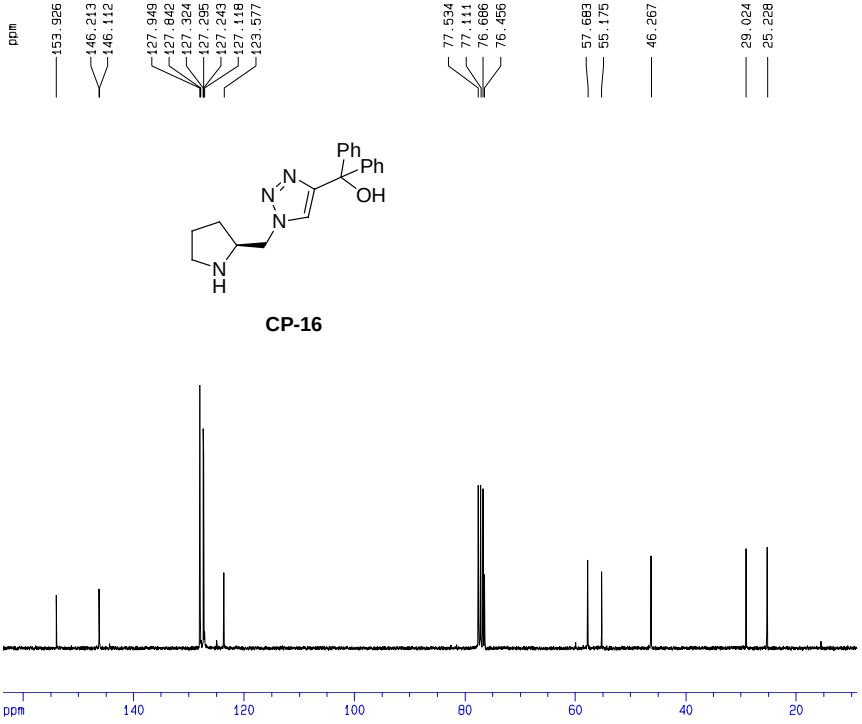
```
Current Data Parameters
NAME          XH-060627-5
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20060627
Time               13.10
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                   256
DW                81.000 usec
DE                 6.00 usec
TE                301.7 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1        300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF          300.1300064 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                  8.00 cm
F1P                8.568 ppm
F1              2571.38 Hz
F2P                0.263 ppm
F2                 78.90 Hz
PPMCM           0.37749 ppm/cm
HZCM          113.29460 Hz/cm
```



CP-16

```
Current Data Parameters
NAME          XH-CP-9-f
EXPNO                 21
PROCNO                 1

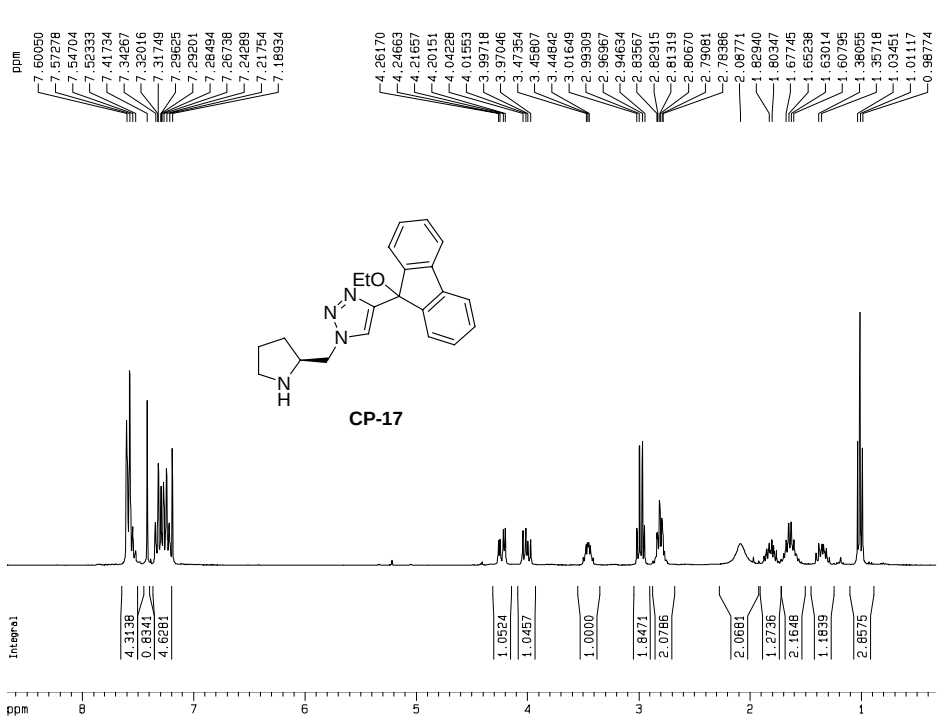
F2 - Acquisition Parameters
Date_           20050828
Time               2.36
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   561
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                  6502
DW                27.800 usec
DE                 6.00 usec
TE                673.2 K
D1             2.00000000 sec
d11            0.03000000 sec
d12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.40 usec
PL1               -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2           80.00 usec
PL2               -1.00 dB
PL12              18.00 dB
PL13              18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF          75.4677490 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 20.00 cm
CY                  6.00 cm
F1P              163.651 ppm
F1             12350.40 Hz
F2P                8.979 ppm
F2               677.62 Hz
PPMCM           7.73362 ppm/cm
HZCM          583.63910 Hz/cm
```



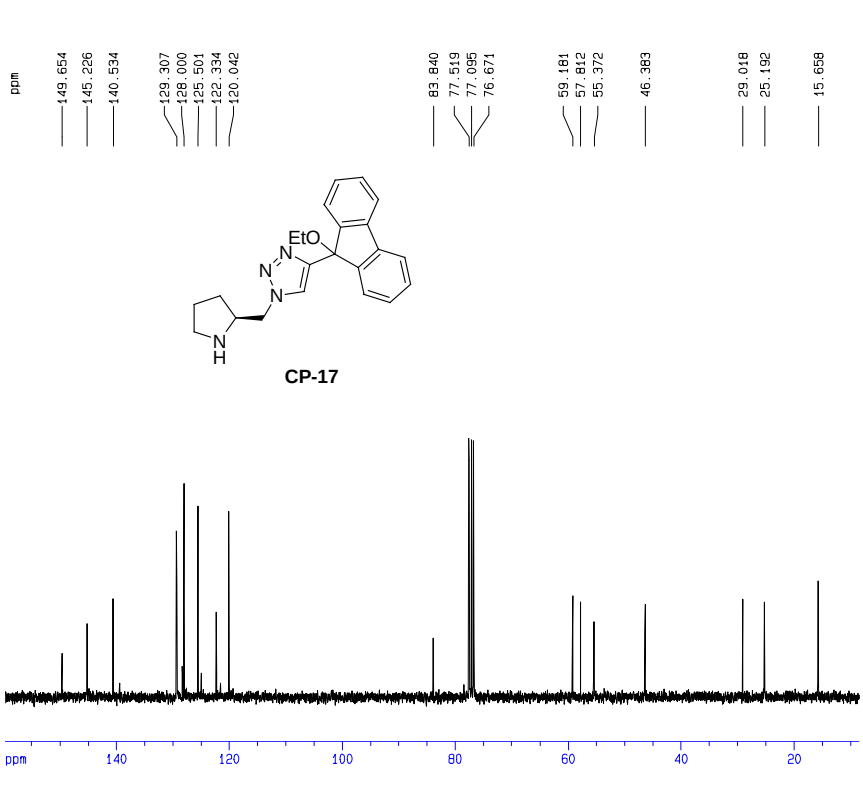

```
Current Data Parameters
NAME         XH-060627-6
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20060627
Time              13.15
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                  256
DW             81.000 usec
DE              6.00 usec
TE              301.7 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                1H
P1               9.30 usec
PL1              -1.00 dB
SFO1       300.1318534 MHz

F2 - Processing parameters
SI                32768
SF          300.1300276 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                22.00 cm
CY                 6.00 cm
F1P               8.680 ppm
F1             2605.14 Hz
F2P               0.330 ppm
F2               98.93 Hz
PPMCM          0.37956 ppm/cm
HZCM          113.91882 Hz/cm
```




```
Current Data Parameters
NAME         XH-CP-29-f
EXPNO                41
PROCNO                1

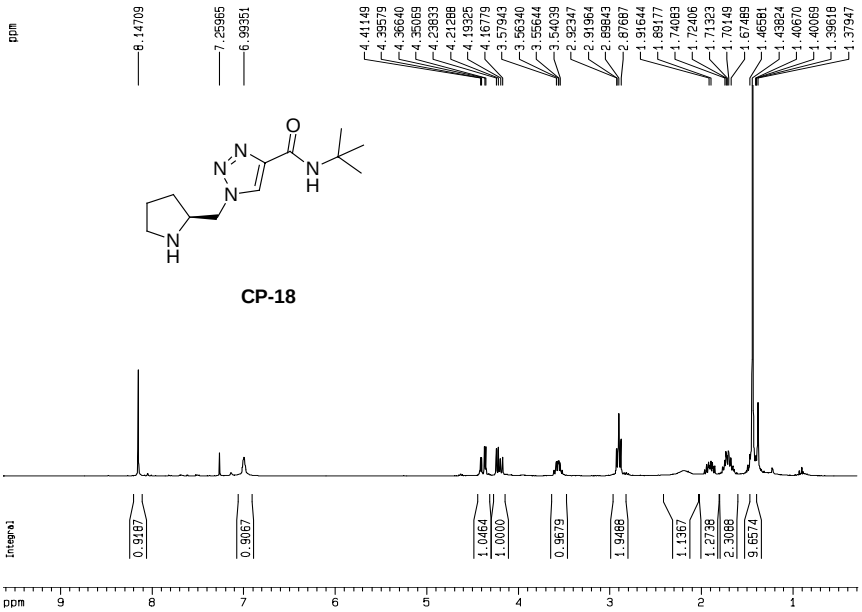
F2 - Acquisition Parameters
Date_          20051021
Time              19.01
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG         zgpg30
TD                65536
SOLVENT           CDCl3
NS                  108
DS                    4
SWH          17985.611 Hz
FIDRES        0.274439 Hz
AQ            1.8219508 sec
RG                 3251
DW             27.800 usec
DE              6.00 usec
TE              299.9 K
D1           2.00000000 sec
d11          0.03000000 sec
d12          0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1               9.40 usec
PL1              -1.00 dB
SFO1       75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2           80.00 usec
PL2              -1.00 dB
PL12             18.00 dB
PL13             18.00 dB
SFO2       300.1312005 MHz

F2 - Processing parameters
SI                32768
SF          75.4677490 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40

1D NMR plot parameters
CX                20.00 cm
CY                 6.00 cm
F1P             159.706 ppm
F1            12052.63 Hz
F2P               8.453 ppm
F2              637.92 Hz
PPMCM          7.56264 ppm/cm
HZCM          570.73547 Hz/cm
```



CP-18

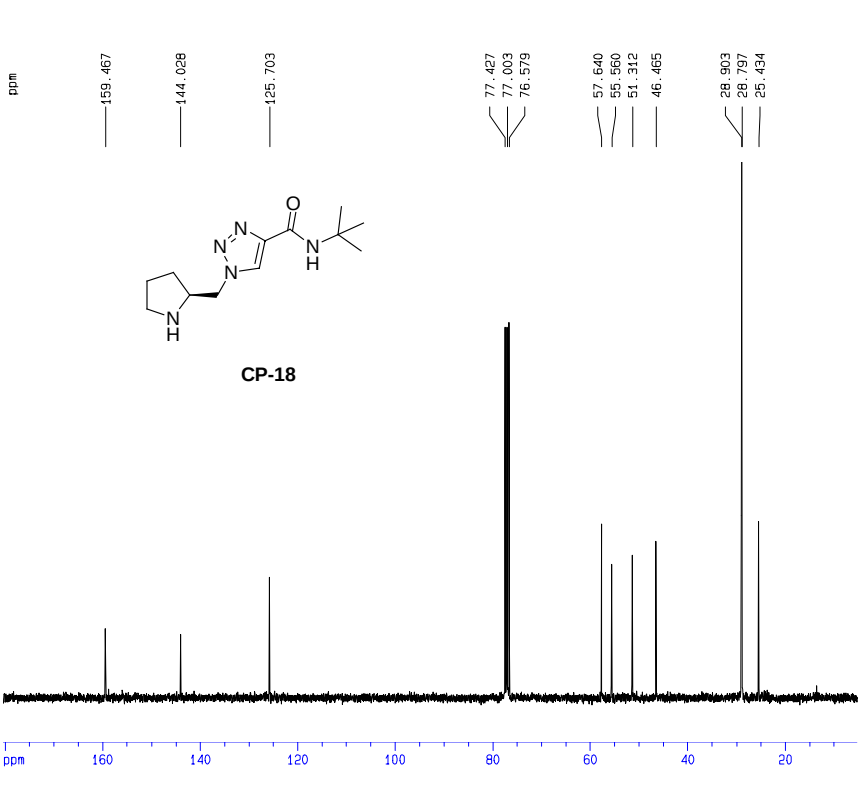
```
Current Data Parameters
NAME            XH-CP-25-f
EXPNO                   20
PROCNO                   1

F2 - Acquisition Parameters
Date_           20051213
Time                13.24
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 101.6
DW                81.000 usec
DE                 6.00 usec
TE                292.7 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                 9.30 usec
PL1                -1.00 dB
SFO1         300.1318634 MHz

F2 - Processing parameters
SI                 32768
SF           300.1300064 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                20.00 cm
CY                25.00 cm
F1P               9.627 ppm
F1              2889.45 Hz
F2P               0.297 ppm
F2               89.19 Hz
PPMCM           0.46651 ppm/cm
HZCM          140.01308 Hz/cm
```



CP-18

```
Current Data Parameters
NAME            XH-CP-25-f
EXPNO                   21
PROCNO                   1

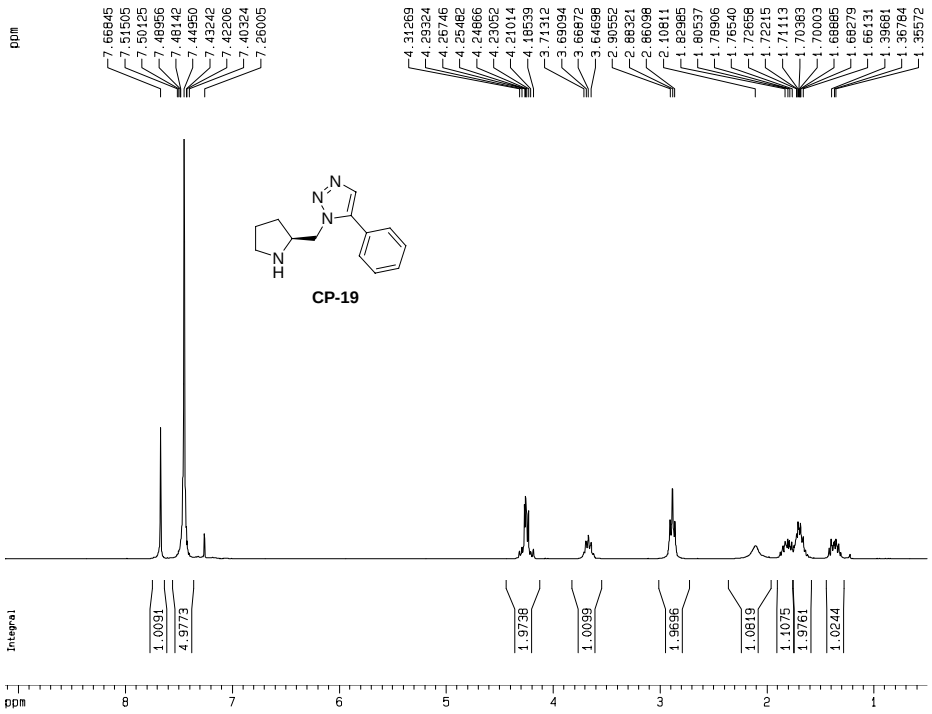
F2 - Acquisition Parameters
Date_           20051213
Time                13.45
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   285
DS                     4
SWH           17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                2298.8
DW                27.800 usec
DE                 6.00 usec
TE                293.5 K
D1             2.00000000 sec
D11            0.03000000 sec
D12            0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 9.40 usec
PL1                -1.00 dB
SFO1          75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2                -1.00 dB
PL12               18.00 dB
PL13               18.00 dB
SFO2         300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF           75.4677548 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40

1D NMR plot parameters
CX                20.00 cm
CY                12.50 cm
F1P             180.410 ppm
F1            13615.14 Hz
F2P               5.220 ppm
F2              393.92 Hz
PPMCM           8.75951 ppm/cm
HZCM          661.06061 Hz/cm
```



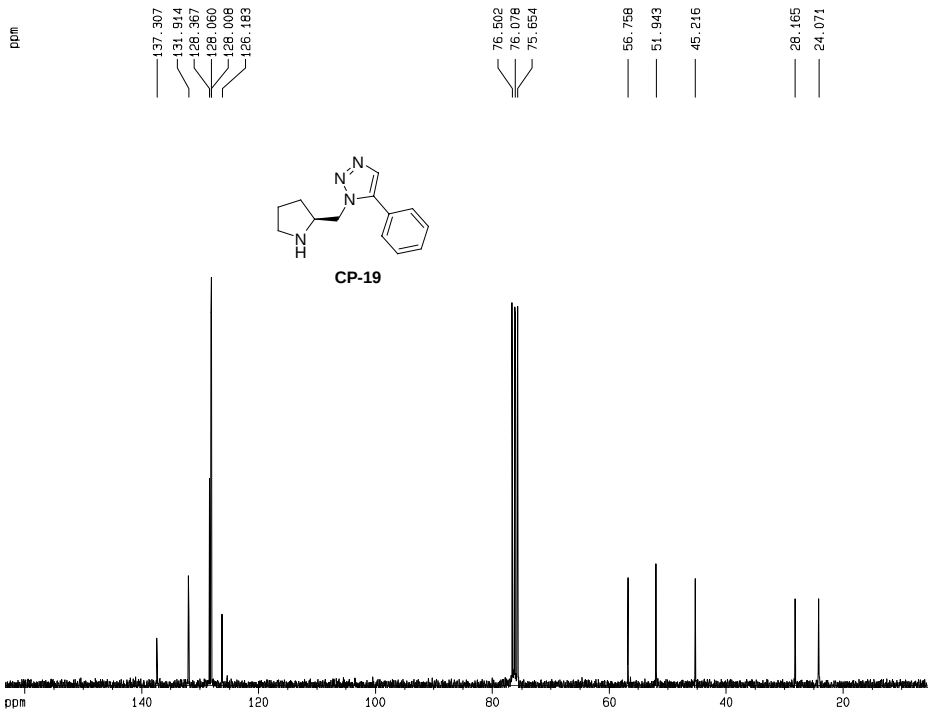

```
Current Data Parameters
NAME          XH-15CP-1-3
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20051223
Time                13.23
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH             6172.839 Hz
FIDRES          0.094190 Hz
AQ              5.3084660 sec
RG                    114
DW                 81.000 usec
DE                  6.00 usec
TE                 294.4 K
D1              2.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                   9.30 usec
PL1                 -1.00 dB
SFO1          300.1318534 MHz

F2 - Processing parameters
SI                  32768
SF            300.1300064 MHz
WDW                    EM
SSB                     0
LB                   0.30 Hz
GB                      0
PC                   1.00

1D NMR plot parameters
CX                  22.00 cm
CY                  10.00 cm
F1P                 9.128 ppm
F1                2739.56 Hz
F2P                 0.501 ppm
F2                 150.51 Hz
PPMCM           0.39211 ppm/cm
HZCM          117.68408 Hz/cm
```




```
Current Data Parameters
NAME          XH-15CP-1-3
EXPNO                  11
PROCNO                  1

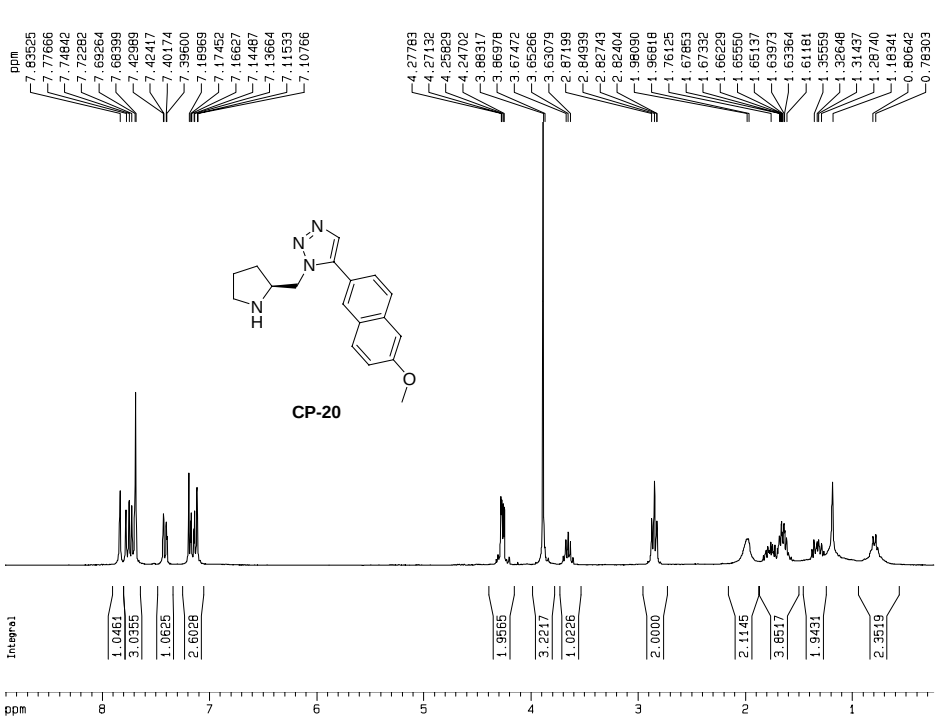
F2 - Acquisition Parameters
Date_           20051223
Time                13.27
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG           zgpg30
TD                  65536
SOLVENT             CDCl3
NS                    140
DS                      4
SWH            17985.611 Hz
FIDRES          0.274439 Hz
AQ              1.8219508 sec
RG                 9195.2
DW                 27.800 usec
DE                  6.00 usec
TE                 294.6 K
D1              2.00000000 sec
d11             0.03000000 sec
d12             0.00002000 sec

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.40 usec
PL1                 -1.00 dB
SFO1          75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                   1H
PCPD2               80.00 usec
PL2                 -1.00 dB
PL12                18.00 dB
PL13                18.00 dB
SFO2          300.1312005 MHz

F2 - Processing parameters
SI                  32768
SF            75.4678263 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40

1D NMR plot parameters
CX                  22.00 cm
CY                  10.00 cm
F1P                163.416 ppm
F1               12332.67 Hz
F2P                 5.587 ppm
F2                 421.67 Hz
PPMCM           7.17404 ppm/cm
HZCM          541.40918 Hz/cm
```



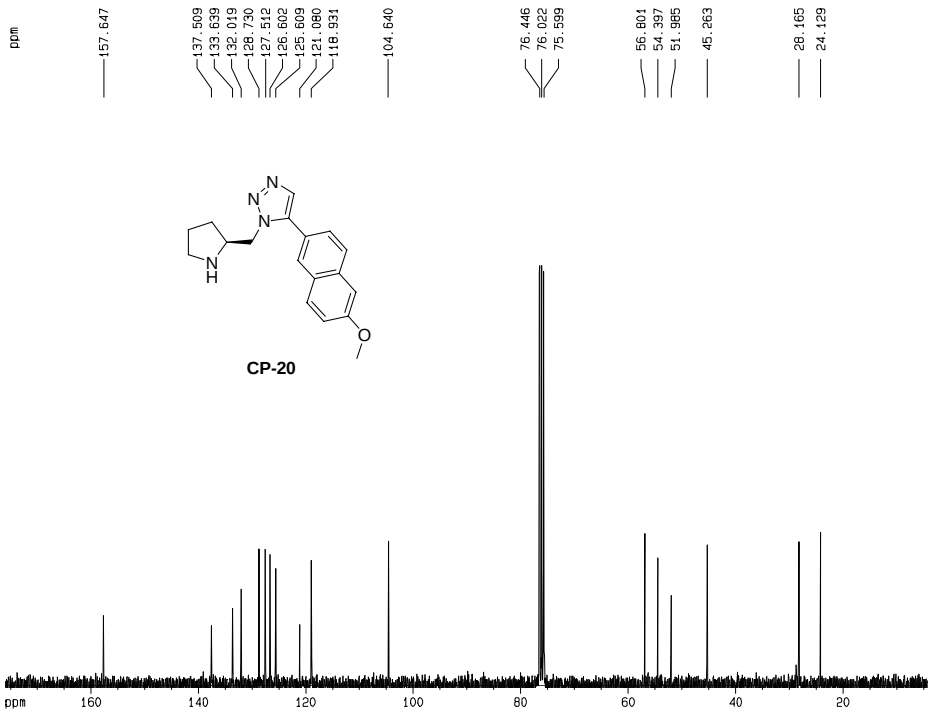

```
Current Data Parameters
NAME         XH-060627-7
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20060627
Time               13.21
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                228.1
DW               81.000 usec
DE                6.00 usec
TE                301.7 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                 9.30 usec
PL1                -1.00 dB
SFO1        300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF          300.1300274 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 12.00 cm
F1P                8.909 ppm
F1              2674.00 Hz
F2P                0.239 ppm
F2                71.65 Hz
PPMCM          0.39412 ppm/cm
HZCM          118.28831 Hz/cm
```




```
Current Data Parameters
NAME         XH-060418-1
EXPNO                 11
PROCNO                 1

F2 - Acquisition Parameters
Date_           20060418
Time               12.55
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   228
DS                     4
SWH          17985.611 Hz
FIDRES        0.274439 Hz
AQ            1.8219508 sec
RG                 6502
DW               27.800 usec
DE                6.00 usec
TE                296.8 K
D1           2.00000000 sec
d11          0.03000000 sec
d12          0.00002000 sec

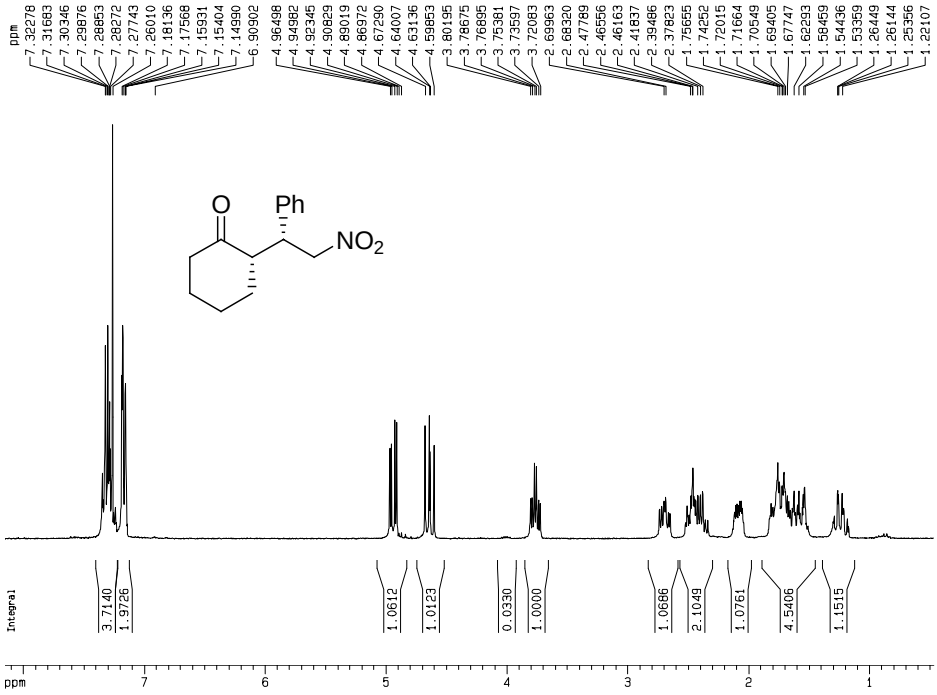
======== CHANNEL f1 ========
NUC1                 13C
P1                 9.40 usec
PL1                -1.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2                -1.00 dB
PL12               18.00 dB
PL13               18.00 dB
SFO2        300.1312005 MHz

F2 - Processing parameters
SI                 32768
SF          75.4678269 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P              176.035 ppm
F1             13284.98 Hz
F2P                4.265 ppm
F2               321.84 Hz
PPMCM          7.80775 ppm/cm
HZCM         589.23364 Hz/cm
```

^{1}H NMR spectra for the Michael products



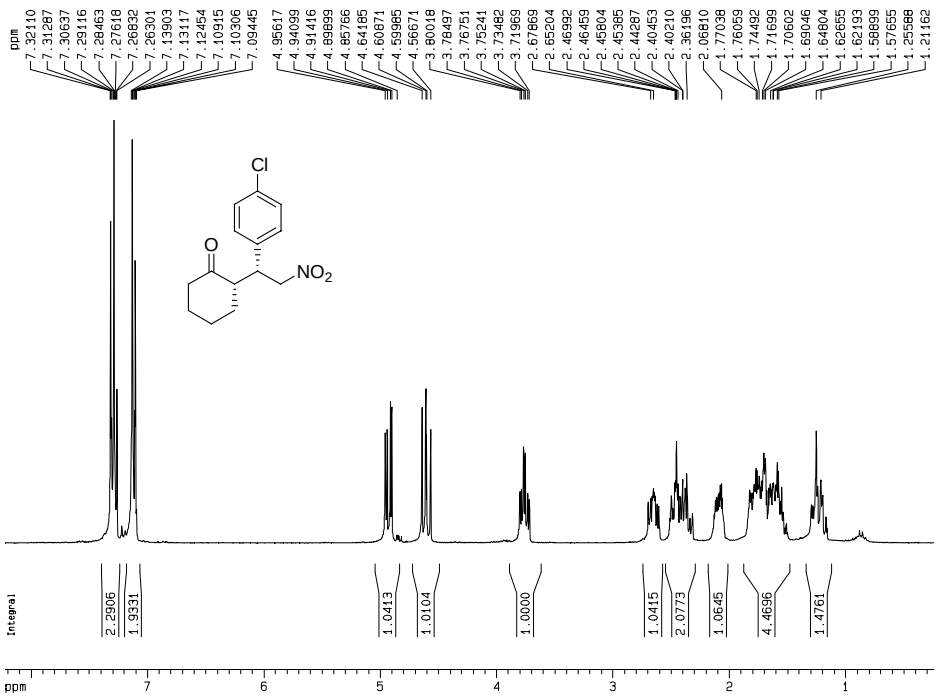

```
Current Data Parameters
NAME          XH-MCP1-3
EXPNO                10
PROCNO                1

F2 - Acquisition Parameters
Date_         20050828
Time              5.11
INSTRUM          av300
PROBHD   5 mm DUL 13C-1
PULPROG           zg30
TD               65536
SOLVENT           CDCl3
NS                  16
DS                   2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                322.5
DW               81.000 usec
DE                6.00 usec
TE               673.2 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1        300.1318534 MHz

F2 - Processing parameters
SI                32768
SF          300.1300063 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                22.00 cm
CY                10.00 cm
F1P               8.166 ppm
F1              2447.92 Hz
F2P               0.469 ppm
F2               140.83 Hz
PPMCM          0.34941 ppm/cm
HZCM          104.86773 Hz/cm
```



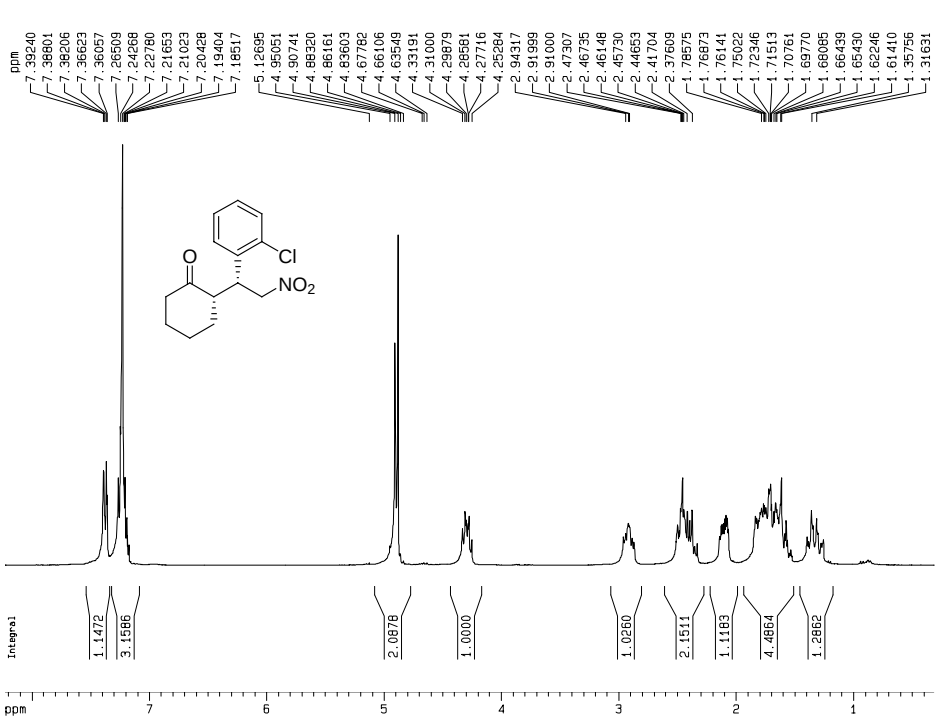

```
Current Data Parameters
NAME          XH-060609-3
EXPNO                10
PROCNO                1

F2 - Acquisition Parameters
Date_         20060609
Time             13.48
INSTRUM          av300
PROBHD   5 mm DUL 13C-1
PULPROG           zg30
TD               65536
SOLVENT           CDCl3
NS                  16
DS                   2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                256
DW               81.000 usec
DE                6.00 usec
TE               301.0 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1        300.1318534 MHz

F2 - Processing parameters
SI                32768
SF          300.1300054 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                22.00 cm
CY                10.00 cm
F1P               8.228 ppm
F1              2469.41 Hz
F2P               0.243 ppm
F2               73.06 Hz
PPMCM          0.36293 ppm/cm
HZCM          108.92511 Hz/cm
```



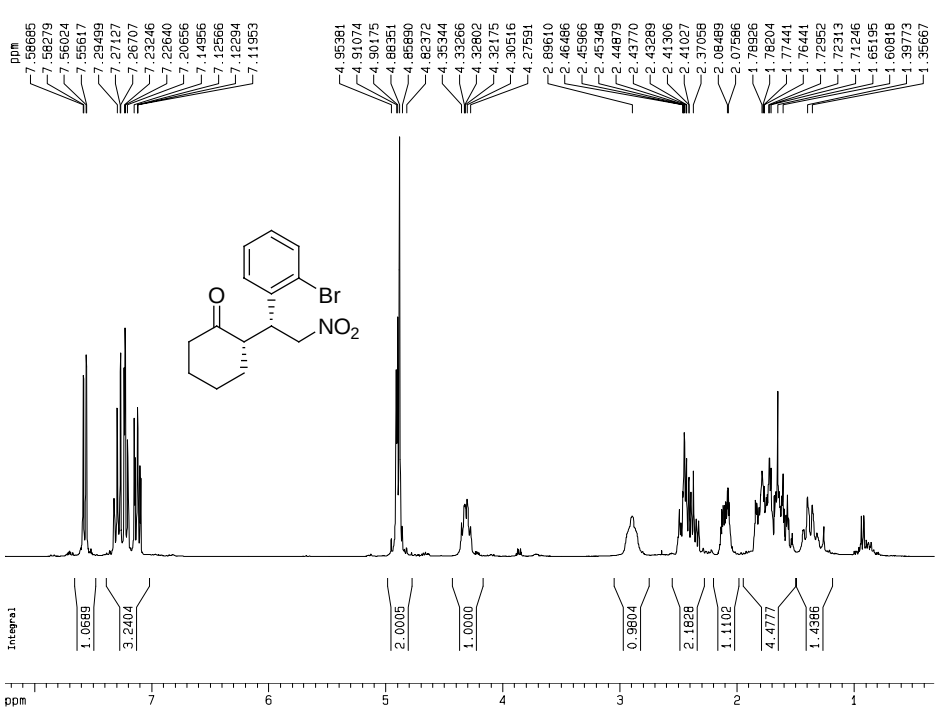

```
Current Data Parameters
NAME         XH-060607-5
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20060607
Time               14.06
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                  181
DW             81.000 usec
DE              6.00 usec
TE              301.5 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                1H
P1               9.30 usec
PL1             -1.00 dB
SFO1       300.1318534 MHz

F2 - Processing parameters
SI                32768
SF          300.1300045 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                22.00 cm
CY                10.00 cm
F1P               8.231 ppm
F1              2470.31 Hz
F2P               0.315 ppm
F2               94.55 Hz
PPMCM          0.35981 ppm/cm
HZCM          107.98879 Hz/cm
```



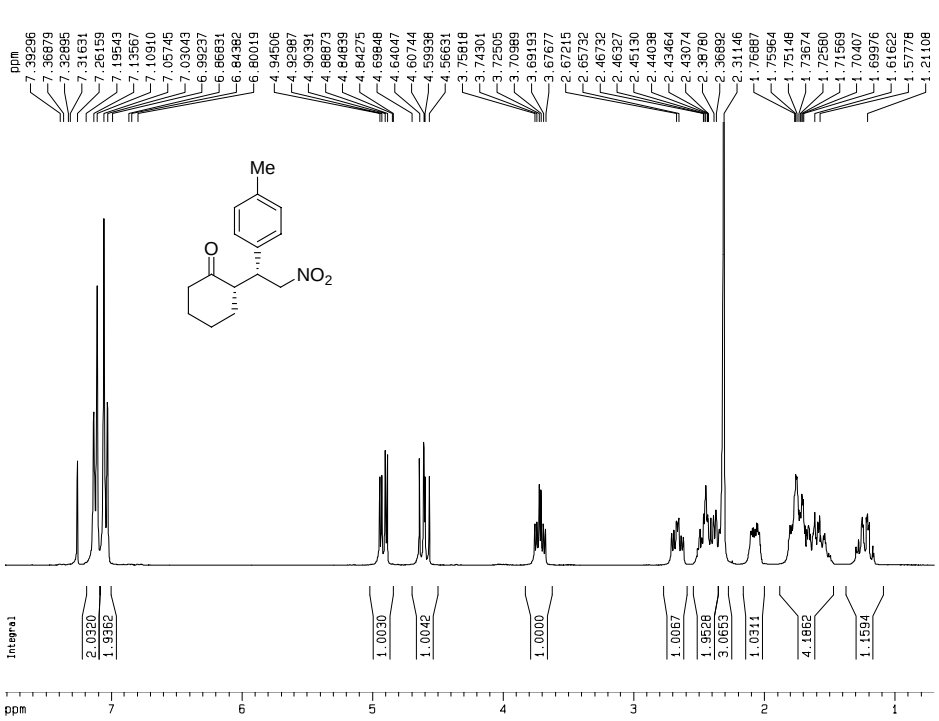

```
Current Data Parameters
NAME          Mi-2BrNS-ra
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20050929
Time               18.56
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                  128
DW             81.000 usec
DE              6.00 usec
TE              300.5 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                1H
P1               9.30 usec
PL1             -1.00 dB
SFO1       300.1318534 MHz

F2 - Processing parameters
SI                32768
SF          300.1300041 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                22.00 cm
CY                10.00 cm
F1P               8.255 ppm
F1              2477.58 Hz
F2P               0.316 ppm
F2               94.96 Hz
PPMCM          0.36085 ppm/cm
HZCM          108.30091 Hz/cm
```



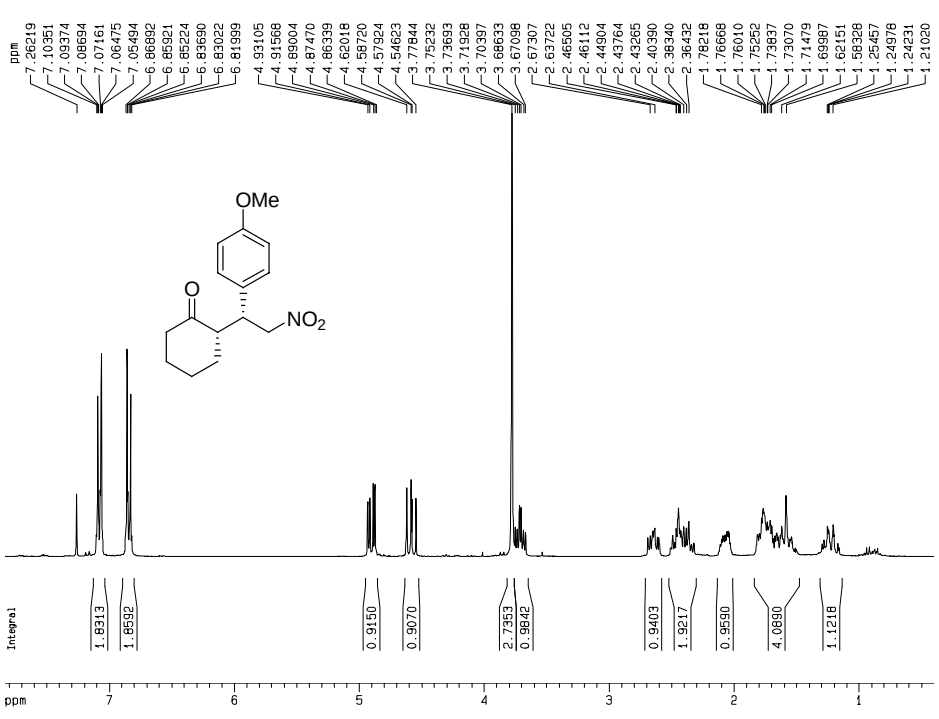

```
Current Data Parameters
NAME          XH-CP1F-1
EXPNO                20
PROCNO                1

F2 - Acquisition Parameters
Date_          20050213
Time              12.46
INSTRUM           av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                228.1
DW               81.000 usec
DE                6.00 usec
TE               295.8 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1        300.1318534 MHz

F2 - Processing parameters
SI                32768
SF           300.1300056 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                22.00 cm
CY                20.00 cm
F1P               7.815 ppm
F1             2345.60 Hz
F2P               0.700 ppm
F2              210.16 Hz
PPMCM          0.32341 ppm/cm
HZCM          97.06508 Hz/cm
```



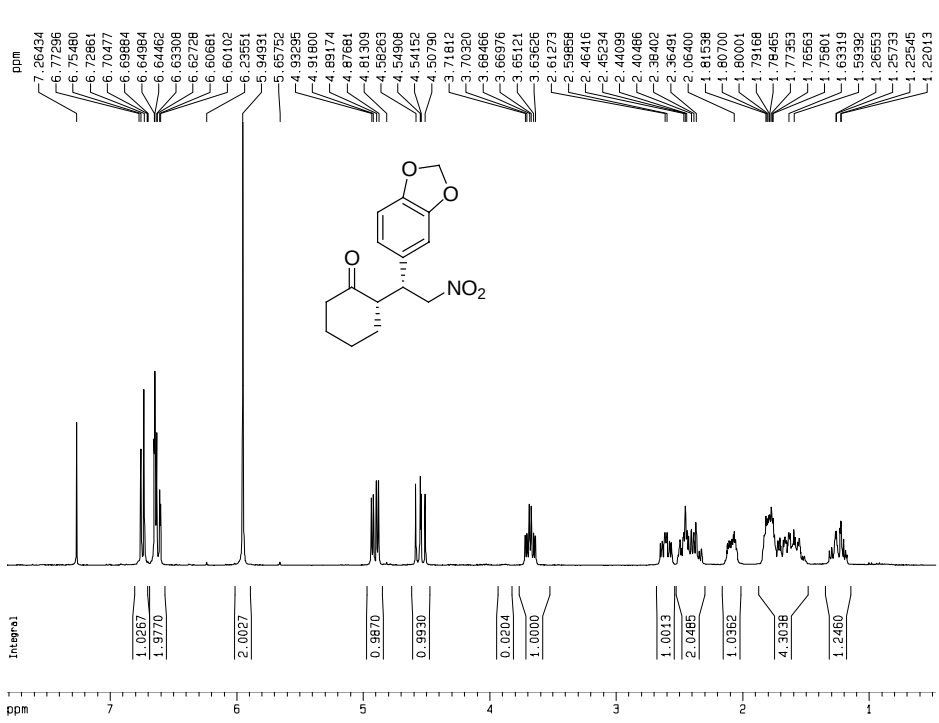

```
Current Data Parameters
NAME        Mi-4MONS-BF4
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20050927
Time              19.32
INSTRUM           av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH           6172.839 Hz
FIDRES        0.094190 Hz
AQ            5.3084660 sec
RG                203.2
DW               81.000 usec
DE                6.00 usec
TE               300.6 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                 1H
P1                 9.30 usec
PL1               -1.00 dB
SFO1        300.1318534 MHz

F2 - Processing parameters
SI                32768
SF           300.1300057 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00

1D NMR plot parameters
CX                22.00 cm
CY                20.00 cm
F1P               7.838 ppm
F1             2352.43 Hz
F2P               0.403 ppm
F2              120.87 Hz
PPMCM          0.33797 ppm/cm
HZCM          101.43456 Hz/cm
```



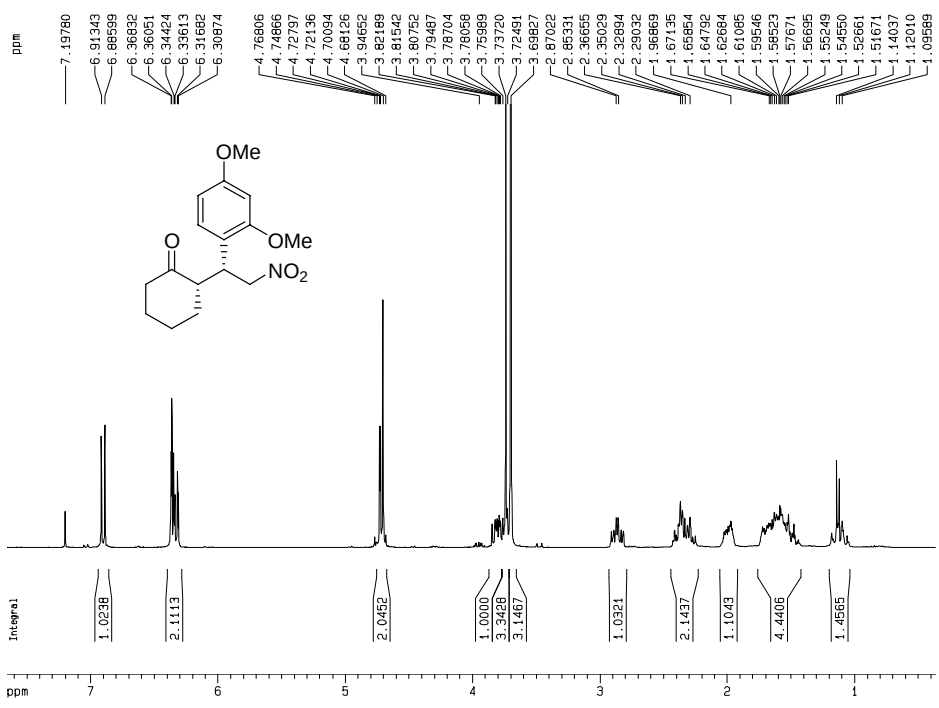

```
Current Data Parameters
NAME            XH-PBM-8
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20060213
Time                13.05
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 322.5
DW                81.000 usec
DE                 6.00 usec
TE                295.8 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                  9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF            300.1300050 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 15.00 cm
F1P                7.817 ppm
F1              2346.22 Hz
F2P                0.474 ppm
F2               142.13 Hz
PPMCM           0.33381 ppm/cm
HZCM           100.18613 Hz/cm
```



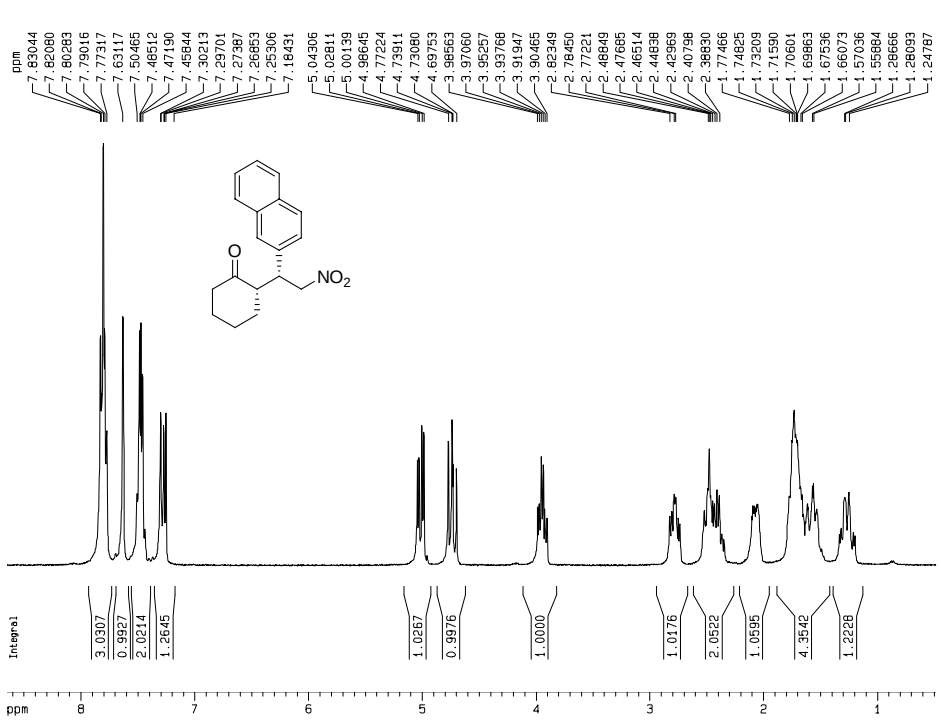

```
Current Data Parameters
NAME            XH-CP1F-6
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20060214
Time                13.39
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 101.6
DW                81.000 usec
DE                 6.00 usec
TE                296.7 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                  9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF            300.1300248 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 20.00 cm
F1P                7.660 ppm
F1              2298.94 Hz
F2P                0.362 ppm
F2               108.57 Hz
PPMCM           0.33173 ppm/cm
HZCM           99.56193 Hz/cm
```



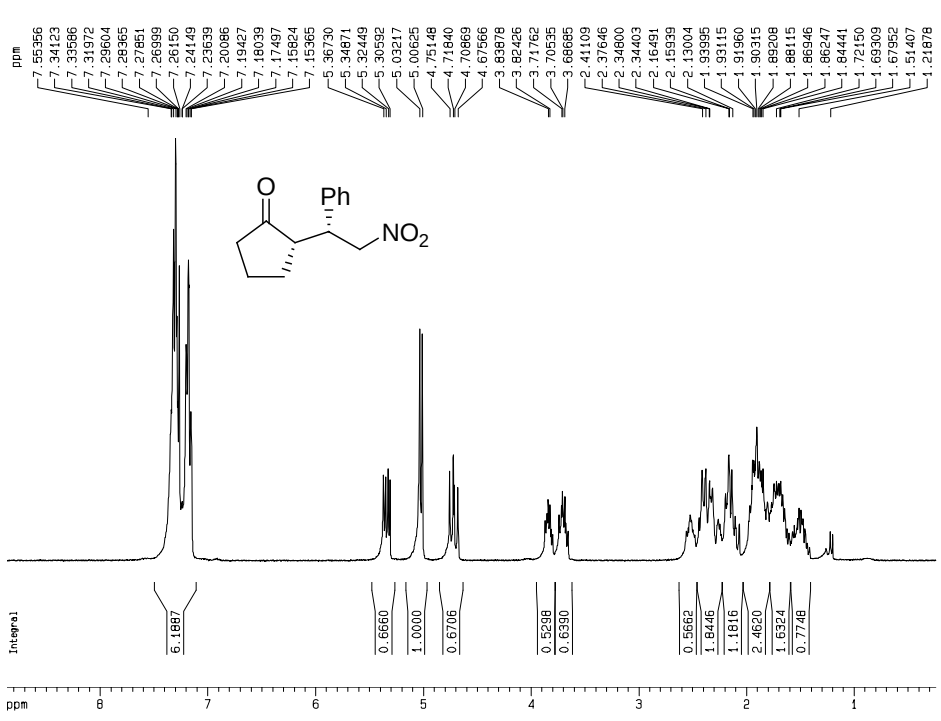

```
Current Data Parameters
NAME         XH-060607-4
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20060607
Time               14.11
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 287.4
DW                81.000 usec
DE                 6.00 usec
TE                301.4 K
D1            2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                  9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF           300.1300083 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                8.653 ppm
F1              2596.96 Hz
F2P                0.485 ppm
F2               145.67 Hz
PPMCM           0.37125 ppm/cm
HZCM          111.42197 Hz/cm
```



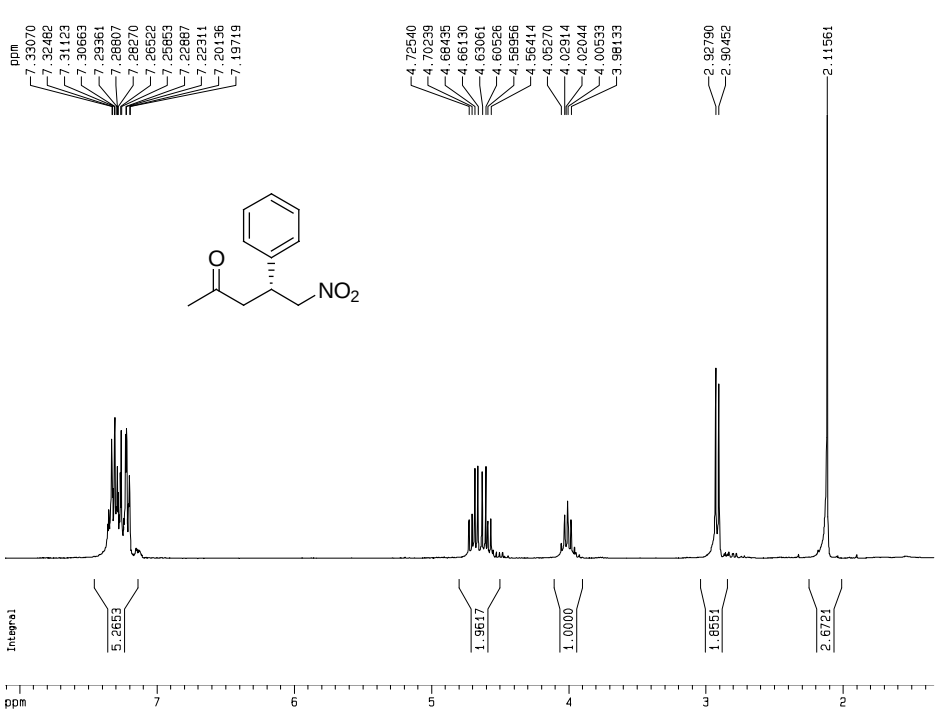

```
Current Data Parameters
NAME         XH-CP1F-12
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20060214
Time               13.46
INSTRUM            av300
PROBHD   5 mm DUL 13C-1
PULPROG            zg30
TD                65536
SOLVENT           CDCl3
NS                   16
DS                    2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ             5.3084660 sec
RG                 362
DW                81.000 usec
DE                 6.00 usec
TE                296.7 K
D1            2.00000000 sec

======== CHANNEL f1 ========
NUC1                  1H
P1                  9.30 usec
PL1                -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF           300.1300052 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P                8.869 ppm
F1              2661.89 Hz
F2P                0.244 ppm
F2               73.28 Hz
PPMCM           0.39204 ppm/cm
HZCM          117.66409 Hz/cm
```



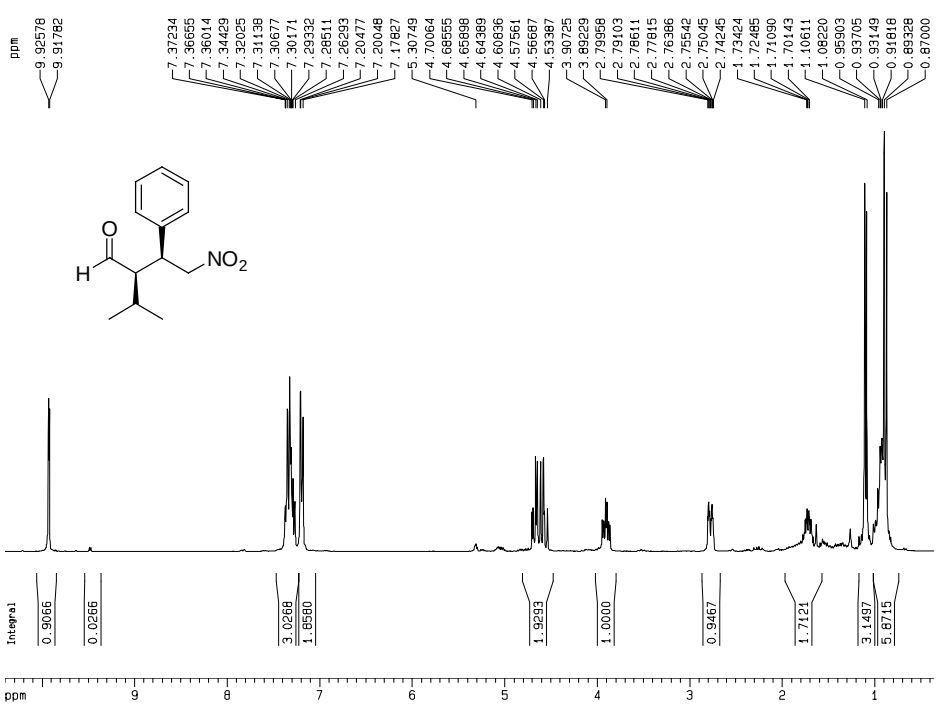

```
Current Data Parameters
NAME            XH-CP1F-9
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20060214
Time                13.16
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH             6172.839 Hz
FIDRES          0.094190 Hz
AQ              5.3084660 sec
RG                  406.4
DW                 81.000 usec
DE                  6.00 usec
TE                 297.2 K
D1              2.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                   9.30 usec
PL1                 -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF            300.1300065 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 15.00 cm
F1P                8.110 ppm
F1               2434.00 Hz
F2P                1.338 ppm
F2                401.66 Hz
PPMCM           0.30781 ppm/cm
HZCM           92.38347 Hz/cm
```




```
Current Data Parameters
NAME          XH-060426-1
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20060426
Time                12.21
INSTRUM             av300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH             6172.839 Hz
FIDRES          0.094190 Hz
AQ              5.3084660 sec
RG                  114
DW                 81.000 usec
DE                  6.00 usec
TE                 299.1 K
D1              2.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                   9.30 usec
PL1                 -1.00 dB
SFO1         300.1318534 MHz

F2 - Processing parameters
SI                 32768
SF            300.1300051 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 22.00 cm
CY                 10.00 cm
F1P               10.402 ppm
F1              3122.06 Hz
F2P                0.359 ppm
F2               107.73 Hz
PPMCM           0.45652 ppm/cm
HZCM           137.01468 Hz/cm
```